

NATIONAL BISON RANGE - NINEPIPE and
PABLO (NWR) NARRATIVE REPORT 1968

NATIONAL BISON RANGE

NINEPIPE REFUGE

PABLO REFUGE

Refuge Narrative Report

Calendar Year 1968

UNITED STATES DEPARTMENT OF THE INTERIOR

Bureau of Sport Fisheries and Wildlife
Fish and Wildlife Service
Moiese, Montana

N A T I O N A L B I S O N R A N G E

Refuge Narrative Report

Calendar Year 1968

PERMANENT PERSONNEL

Joseph P. Mazzoni, Refuge Manager (trans. 12/15/68)
Marvin R. Kaschke, Refuge Manager (E.O.D. 12/18/68)
Frank L. Kenney, Refuge Manager, Ninepipe (trans. 10/23/68)
John G. Augsburg, Assistant Refuge Manager (resigned 9/7/68)
Victor B. May, Refuge Maintenance Foreman II
Grant Hogge, Heavy Duty Mechanic
Ernest W. Kraft, Maintenceman III
Gladys C. Young, Clerk-Typist (retired 11/02/68)
Edward G. Krantz, Maintenceman I, WAE
Robert L. Middlemist, Maintenceman I, WAE
William L. Lampshire, Laborer, WAE
Merle B. Blankenship, Student-Trainee

TEMPORARY PERSONNEL

Robert L. McVey, Laborer
Walter L. Largent, Laborer
Arnold Bauer, Laborer
Harold Knudsen, Laborer
Gerald Henrikson, Bio-Aid
Russell Wallace, YOC
Rick Knudsen, YOC
Sharon A. Oxford, Clerk-Typist
Monica Pederson, Work-study employee
Paul Roush, NYC
David Knudsen, NYC

TABLE OF CONTENTS

I.	<u>GENERAL</u>	<u>Page</u>
	A. Weather Conditions.....	1
	B. Habitat Conditions	
	1. Water.....	1
	2. Food and Cover.....	2
II.	<u>WILDLIFE</u>	
	A. Migratory Birds	
	1. Waterfowl.....	2
	2. Other Water Birds.....	2
	3. Shore Birds.....	2
	4. Mourning Doves.....	3
	B. Upland Game Birds.....	3
	C. Big-Game Animals	
	1. Buffalo.....	5
	2. Elk.....	11
	3. Mule Deer.....	11
	4. White-tailed Deer.....	11
	5. Bighorn Sheep.....	15
	6. Antelope.....	16
	7. Rocky Mountain Goats.....	16
	8. Longhorn Steers.....	16
	9. Black Bear.....	16
	D. Fur Animals, Predators, Rodents and other Mammals	16
	E. Hawks, Eagles, Owls, Ravens and Magpies.....	17
	F. Other Birds.....	18
	G. Fish.....	18
	H. Reptiles.....	18
	I. Diseases	
	1. Buffalo.....	18
	2. Elk and Deer.....	19
	3. Bighorn Sheep.....	19
	4. Antelope.....	19
	5. Vegetation.....	19
III.	<u>REFUGE DEVELOPMENT AND MAINTENANCE</u>	
	A. Physical Development	
	1. Refuge Work Program.....	19
	2. Kickinghorse CCC Work Program.....	22
	B. Plantings.....	22
	C. Collections and Receipts.....	23
	D. Control of Vegetation	
	1. Biological Control.....	23
	2. Chemical Control.....	23
	E. Planned Burning.....	24
	F. Fires.....	24
IV.	<u>RESOURCE MANAGEMENT</u>	
	A. Surplus Buffalo Disposal	
	1. Live disposal and meat sales.....	24
	2. Sale and Donation of Hides.....	26
	3. Sale and Donation of Skulls.....	26

TABLE OF CONTENTS (Con't.)

	<u>Page</u>
B. Surplus Elk and Deer Disposal	
1. Meat Disposal.....	26
2. Sale of Elk and Deer Hides and Antlers.....	26
C. Proceeds of Sales.....	27
V. <u>FIELD INVESTIGATION OR APPLIED RESEARCH</u>	
A. Buffalo Weight Studies.....	27
B. Buffalo Measurements.....	27
C. Buffalo Pregnancy and Lactation.....	27
D. Sexual Behavior of Bison.....	29
E. Ecological Comparisons of Social Organization in Bison.....	29
F. Behavior of Cow and Calf Bison.....	29
G. Average Weights and Weight Relationships of Deer and Elk.....	29
H. Bighorn Sheep Weights and Measurements.....	29
I. Refuge Herbarium.....	29
J. Range Condition and Trend.....	29
K. Range Interseeding Study.....	34
L. Re-introduction of Columbian Sharp-tailed Grouse.	34
M. Waterfowl Banding.....	34
VI. <u>PUBLIC RELATIONS</u>	
A. Recreational Uses.....	34
B. Refuge Visitors.....	35
C. Refuge Participation.....	37
D. Hunting.....	38
E. Fishing.....	38
F. Violations.....	38
G. SAFETY.....	39
VII. <u>OTHER ITEMS</u>	
A. Items of Interest	
1. Training.....	40
2. Awards.....	40
3. Miscellaneous.....	41
B. Credits.....	42
C. Photographs.....	42
VIII. <u>SATELLITE REFUGES</u>	
A. Ninepipe text.....	43
1. Ninepipe NR Forms	
B. Pablo text.....	44
1. Pablo NR Forms	

NATIONAL BISON RANGE

Refuge Narrative Report

January 1 to December 31, 1968

I. GENERAL

A. Weather Conditions

Unseasonably warm weather prevailed through the forepart of the year, and the spring-like conditions which developed prompted late February nest building activities by passerine birds. Considerable early grass growth was noted on south and southeast exposures.

The lowest temperature recorded during this period was 4 degrees below zero on January 2. Daytime temperatures remained a comfortable 40 to 50 degrees throughout most of February, and soared to 71 degrees in March.

The moderate weather was accompanied by below average precipitation, and the limited soil moisture reserves were rapidly becoming depleted by early summer. Precipitation through July totaled 8.15 inches, or 2.96 inches below the 15 year mean. Moisture conditions were further aggravated by the irregular pattern in which precipitation was received. For example, rainfall recorded for the months of March through July was .34, 1.24, .59, 1.91, and .03, respectively. The result was progressively drier conditions.

Moisture conditions throughout the Flathead Valley had become critical by the end of July, but were abruptly alleviated with the onset of one of the rainiest periods in the history of this region. A total of 4.85 inches of rainfall was recorded during August and September, or 3 inches above "normal".

The weather during the latter part of the year was again pleasantly mild, but precipitation received was considerably below that normally received during this period.

B. Habitat Conditions

1. Water

Refuge surface water supplies were generally sufficient, although spring flows in some portions of the range were greatly diminished or non-existent by mid-summer. It became evident that available water is inadequate in certain bison grazing units when the period of use coincides with a dry summer period. Personnel continued to locate and develop spring sources in those areas.

2. Food and Cover

Grass and shrub forage production was adequate, despite unfavorable moisture conditions during the critical growing period. Grass seedling production generally appeared successful, but seed production was limited or non-existent in some native perennials. Rough fescue, *Festuca scabrella*, for example, produced virtually no seed. Precipitation received during the fall and early winter of 1967 did little to replenish depleted soil moisture reserves, and poor soil moisture conditions at that time no doubt had an important bearing upon 1968 grass seed production.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl

The first Canada goose nesting activity was noted on February 27 along Mission Creek, near headquarters. Four pair were actively laying and/or incubating by March 29, subsequently producing three broods totaling 18 goslings. A flock varying in number from 20 to 50 birds used the area throughout the summer. With the opening of the waterfowl hunting season in October, the number of birds seeking sanctuary increased to 150.

Two pair of Barrow's goldeneye, an uncommon visitor to the Bison Range, were observed on the display pond March 27. Another pair was seen there on April 17.

The first duck brood was recorded on June 8, when a brood of 11 common mergansers was seen on the Elk Pond. A brood of 10 hooded mergansers was subsequently seen in the same pond, and the first mallard ducklings were noted on the Ravalli Ponds June 17.

At the end of the year, about 800 mallards, 30 common goldeneye, 20 common mergansers, and 25 Canada geese were using refuge waters.

2. Other Water Birds

An estimated 80 to 100 great blue herons, including nestlings, were observed in the Flathead River island colony located about two miles west of headquarters, during a boat trip on July 3. Three to six birds used Mission Creek within the refuge throughout most of the year.

3. Shore Birds

The first killdeer young were noted on May 20, when five were seen with a pair of adults in the Elk Lane. Two young common snipe were observed in Pauline Creek on July 3. Wilson's phalarope and spotted sandpipers occurred on the Ravalli Ponds in usual numbers.

4. Mourning Doves

Two birds wintered in the Headquarters Ridge area, and were frequently seen picking grit along the tour road. The first major influx of spring migrants occurred the first week in May, and the refuge population had increased to a maximum of about 100 birds by the first of June. Several nests were again discovered in and around the bison corrals. The last observation was a single bird in the exhibition pasture on September 2.

B. Upland Game Birds

This group of birds evidently found habitat, weather, and related conditions rather attractive, as production and initial survival of young was excellent for nearly all species.

Male Richardson grouse were first seen strutting on April 25, with courtship behavior in full swing by mid-May. The first brood was recorded on June 17, and the seven broods subsequently observed averaged 4.9 young per brood - as compared to 4.3 in 1967 and 4.2 in 1966.

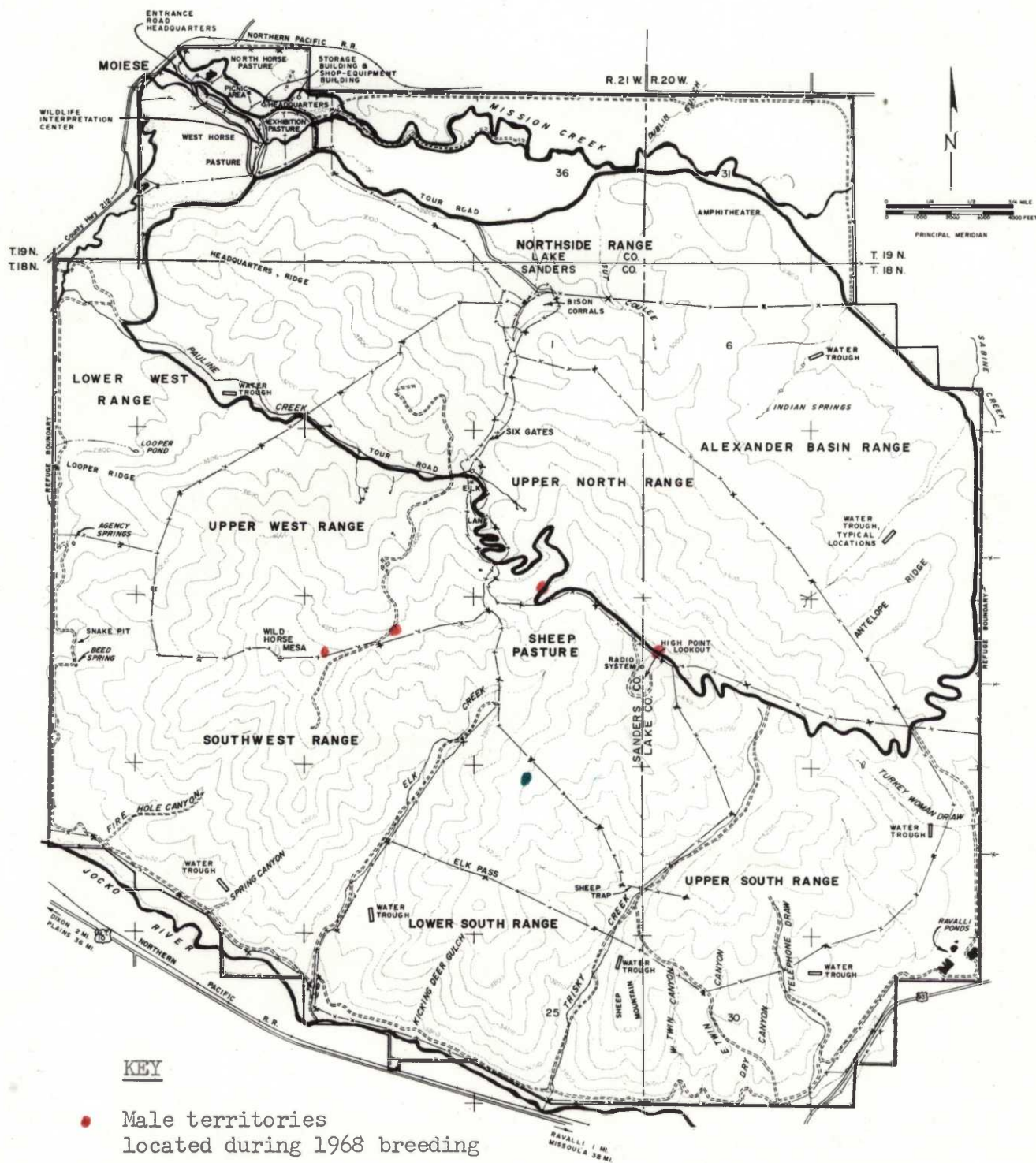
Recent studies by the Montana Fish and Game Department (Mussehl, 1966) indicate that many male Richardson grouse breeding territories have a high degree of annual occupancy, and may be traditional territorial sites used by succeeding generations of grouse. This has important ecological implications, which should be considered in future management of this species on the refuge. While little has been done with this bird in the past, it should be given greater attention in the future for two important reasons: (1) it is the last native upland game bird which occurs on the Bison Range in any significant number; and (2) it is considered a peripheral subspecies in the "Red Book", or official listing of rare and endangered wildlife. The map of known male territories which follows on the next page is an initial effort in this direction.

Ruffed grouse remained fairly common along Mission Creek and the Jocko River adjacent to the refuge. Only one bird was seen on the refuge - in the public fishing access area along the Jocko on January 24.

The 13 gray partridge broods recorded averaged 9.0 young. This bird remained the most abundant refuge upland game species at the end of the year.

Chukar partridges continued to increase in numbers, and it was estimated that over 100 birds were observed during the annual bison roundup in October. Singles and pairs were observed over a far greater area in the spring and early summer than they have been for several years. Six groups identifiable as individual broods averaged 8.8 young per brood. One major covey containing 25 to 30 young was observed in lower Trisky Creek on several occasions beginning on July 11, and a group of 18 was seen near Tower 2 on August 22.

MALE TERRITORIES OF THE RICHARDSON'S GROUSE
(*Dendragapus obscurus richardsonii*)
ON THE NATIONAL BISON RANGE



- Male territories located during 1968 breeding season.

- Previously observed male territories not checked in 1968.

Moise, Montana

PROPOSED PLAN

C. Big Game Animals

1. Buffalo

Bison grazing was regulated in accordance with the established deferred rotation grazing schedule, without deviation. Grazing distribution problems were experienced in some units, particularly, those embracing steep, rugged terrain. However, evidence of overuse was generally limited to small, isolated "pockets" which - by virtue of the terrain, location in relation to water or fences, and other factors - may always be subject to some degree of grazing abuse.

The degree of overuse was minimized through the use of salt and the development of watering facilities in critical areas. Salting has been most effective if (1) placed in small quantities, to both dissuade the animals from "camping" on it, and avoid salt sterilization of vegetation; (2) moved two or, preferably, three times during each three month grazing period; and (3) located - logically - in those areas where grazing needs to be encouraged. While the last point seems rather academic, there is a natural tendency to consistently place salt on ridge tops and other sites characterized by their convenience of location, both to personnel and buffalo.

We have found that the animals will respond quite well to salting sites on virtually any slope and exposure in most range units during most periods of the year. Their need for supplemental salt is nominal in the Alexander Basin and Northside range units, where there apparently is an abundance of natural salts available in the glacial silts which parallel Mission Creek. A record of salting locations is currently maintained to help avoid re-salting the same areas in subsequent years.

The effects of overgrazing was most apparent in the Upper North range, where the animals have a tendency to concentrate between the contour fence and the 3400 to 3600 foot elevation level. Relocation of the Sheep Pasture north boundary fence should alleviate this problem somewhat. The change resulted in 385 acres of Sheep Pasture range and a fair watering facility being added to the Upper North range in the head of Elk Creek. This should encourage more frequent movement through the Upper North range and, hopefully, improved grazing distribution.

Population and use trend data for the period 1957 through 1968 is summarized for bison and the other refuge big game animals on the table and graphs which follow. While such information has rather limited application, it does serve to document trends, and also serves as a basis for evaluating past management practices in relation to relative population levels.

The "Desired Level" referred to in the graph on page 8 is the initial stocking rate recommended by the Soil Conservation Service in their 1964 range site and condition survey. Considerable judgement is obviously required in interpreting this information, due to differences in food habits and other factors. The important thing is that population

BIG GAME POPULATION AND USE TRENDS*
1957 - 1968
National Bison Range

YEAR	BISON		ELK		MULE D.		W.T.D.		PRONG.		SHEEP		GOAT		TOTAL NON-BISON	TOTAL AU	ANIMAL UNIT MONTHS		
	NO.	AU	NO.	AU	NO.	AU	NO.	AU	NO.	AU	NO.	AU	NO.	AU	AU		BISON	OTHER	TOTAL
1957	317	264.2	70	28.0	275	49.1	175	30.2	26	2.7	70	12.5	-	-	122.5	386.7	3170.4	1470.0	4640.4
1958	337	280.8	60	24.0	230	41.1	150	25.9	38	4.0	73	13.0	-	-	108.0	388.8	3369.6	1296.0	4665.6
1959	342	285.0	65	26.0	260	46.4	150	25.9	64	6.7	73	13.0	-	-	118.0	403.0	3420.0	1416.0	4836.0
1960	331	275.8	69	27.6	240	42.9	150	25.9	90	9.4	45	8.0	-	-	113.8	389.6	3309.6	1365.6	4675.2
1961	358	298.3	70	28.0	250	44.6	150	25.9	110	11.5	50	8.9	-	-	118.9	417.2	3579.6	1426.8	5006.4
1962	370	308.3	70	28.0	260	46.4	150	25.9	110	11.5	60	10.7	-	-	122.5	430.8	3699.6	1470.0	5169.6
1963	368	306.7	65	26.0	150	26.8	150	25.9	142	14.8	50	8.9	-	-	102.4	409.1	3680.4	1228.8	4909.2
1964	379	315.8	66	26.4	152	27.1	157	27.1	117	12.2	49	8.8	4	.6	102.2	418.0	3789.6	1226.4	5016.0
1965	334	278.3	55	22.0	200	35.7	175	30.2	88	9.2	48	8.6	4	.6	106.3	384.6	3339.6	1275.6	4615.2
1966	317	264.2	60	24.0	200	35.7	200	34.5	114	11.9	62	11.1	5	.7	117.9	382.1	3170.4	1414.8	4585.2
1967	327	272.5	56	22.4	228	40.7	200	34.5	83	8.6	70	12.5	7	1.0	119.7	392.2	3270.0	1436.4	4706.4
1968	329	274.2	53	21.2	225	40.1	148	25.5	84	8.8	56	10.0	9	1.3	106.9	381.1	3290.4	1282.8	4573.2

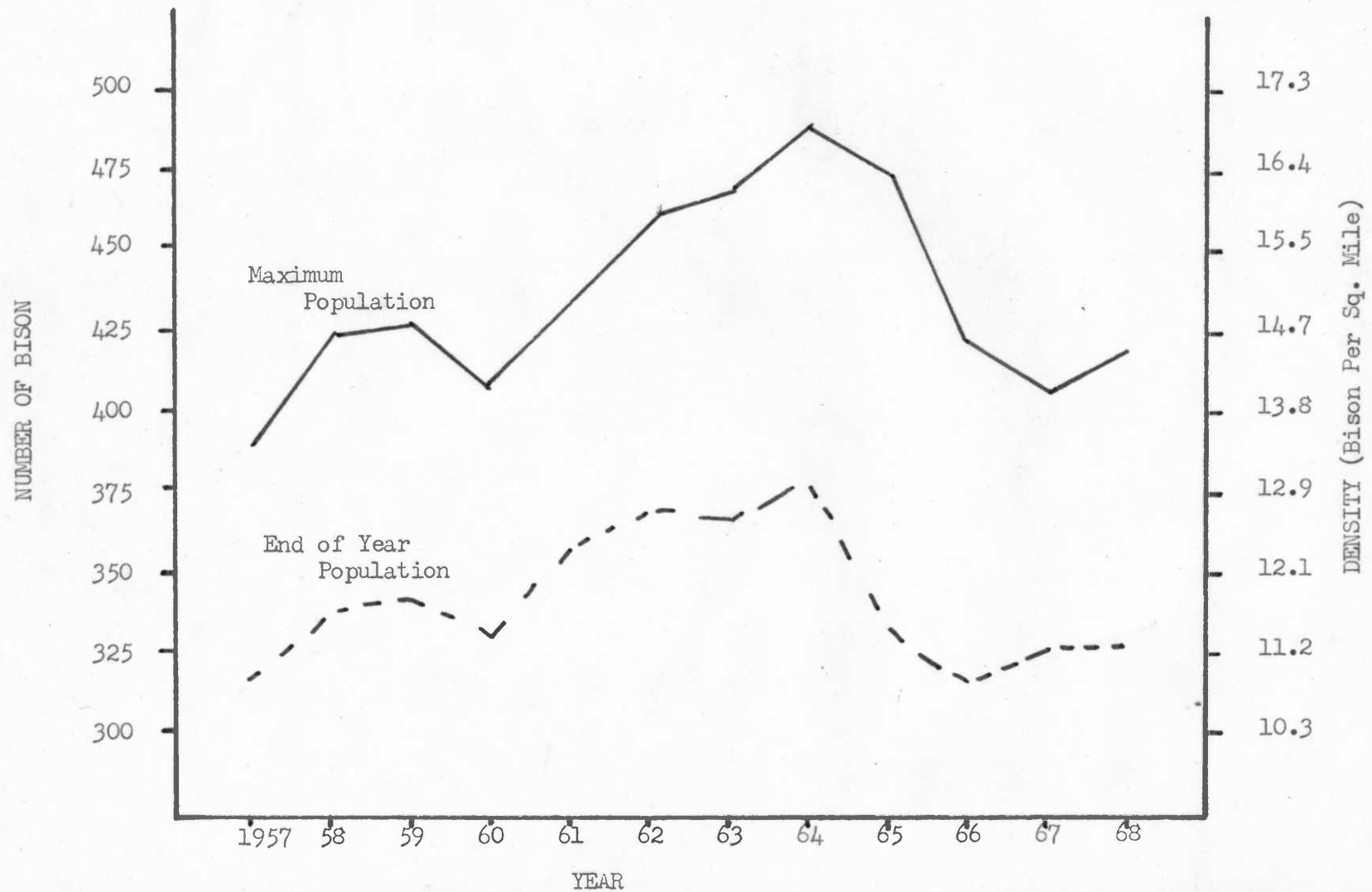
* December population levels for all species.

Animal Unit Equivalents Used**

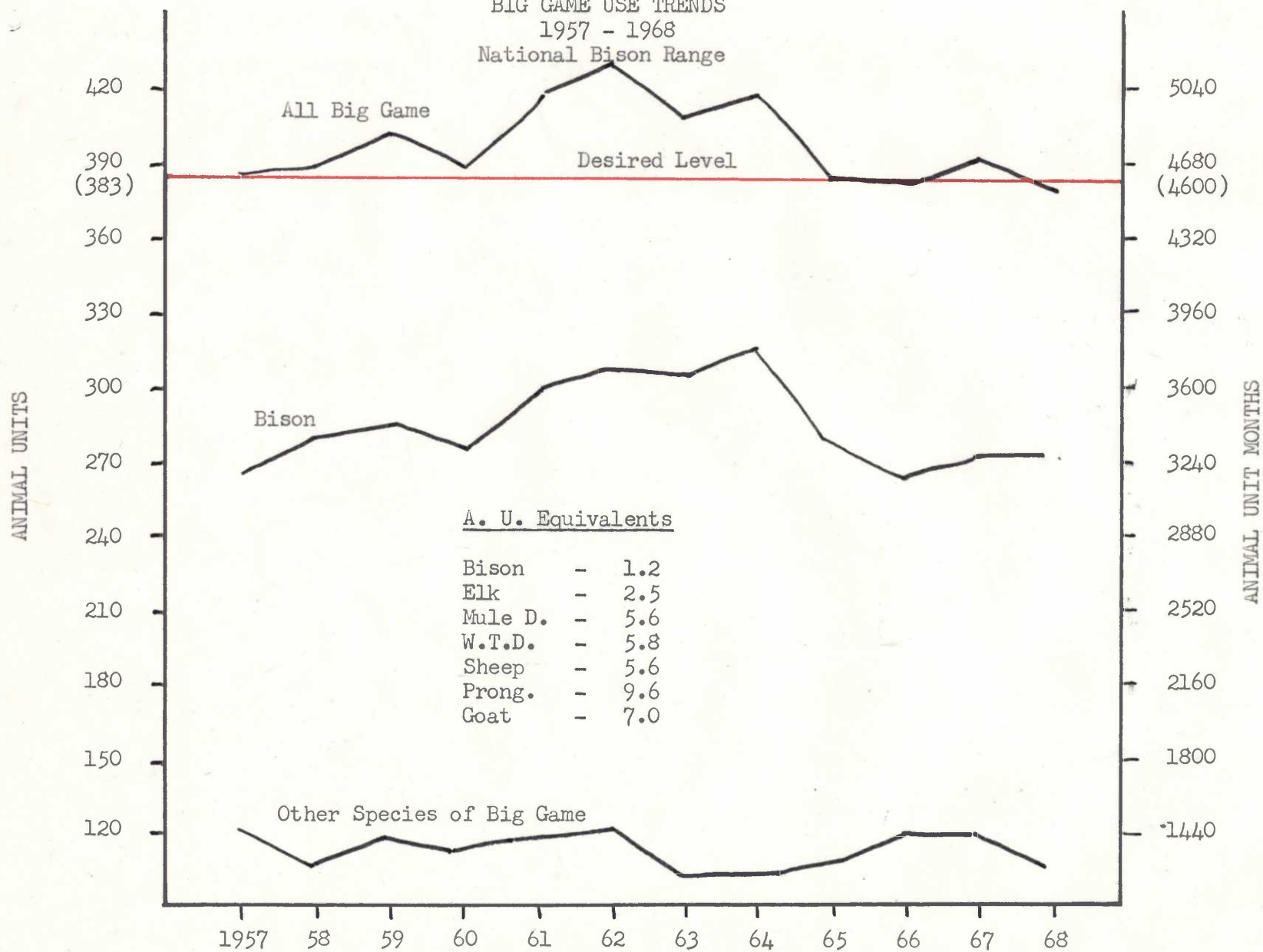
<u>Domestic Cow</u>	<u>Bison</u>	<u>Elk</u>	<u>Mule Deer</u>	<u>W.T. Deer</u>	<u>Sheep</u>	<u>Pronghorn</u>	<u>Goat</u>
1 AU	1.2	2.5	5.6	5.8	5.6	9.6	7.0

** Per Lommasson, 1940 NBR range survey report, page 53; Range Management, Second Edition, Stoddart and Smith, 1965; and refuge bison age-weight data.

BISON POPULATION TRENDS
1957 - 1968
National Bison Range



BIG GAME USE TRENDS
1957 - 1968
National Bison Range



Based on December Population Levels.

levels be closely correlated with the trend in habitat quality. Until this trend is firmly established, it is especially important that the various animals be stocked at conservative levels. It is our judgement that this objective has been fulfilled since the adoption of the site and condition survey recommendations in the fall of 1966. However, it is essential that future evaluations be based on objective, definitive methods of measuring habitat trend, rather than the ocular appraisals heretofore applied. It is hoped that the grassland transects and shrub and conifer photo points established during the summer months will provide a basis for a comprehensive system of administrative habitat studies. These projects are discussed in greater detail in a later section.

A total of 420 animals was tallied during the annual roundup held October 3 through 10. The two range herds were again worked through the corrals independently of one another, and the bulls rotated from one herd to the other during the process.

U.S.D.A. officials John Corcoran, D.V.M., St. Ignatius, and Bob Manlove, Livestock Inspector, Missoula, were on hand for the brucellosis vaccination and ear-tattooing work. The 55 heifer calves were vaccinated, and all calves branded with an "8" on the lower left hip and tattooed with a "V-8" inside the left ear.

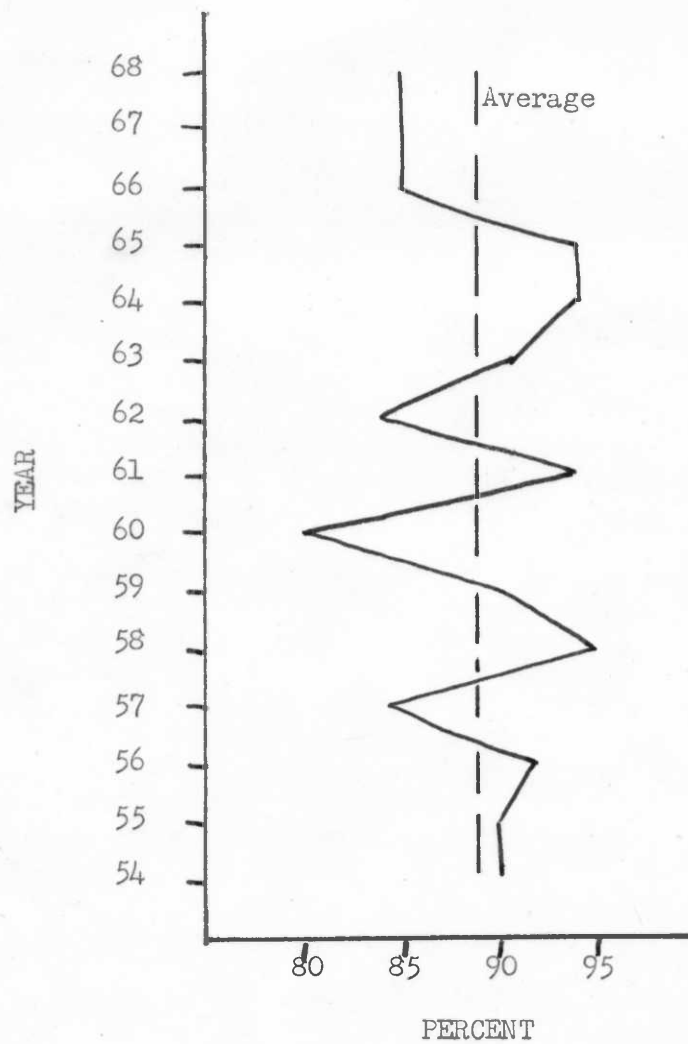
All live-sale animals were ear-tagged, rather than just those destined for interstate shipment. An easily read back-tag was also used. This simplified the sorting and loading process and minimized the amount of handling required. The Thorson designed and constructed squeeze chute handled all age classes with ease, although we did have to add some metal plate on the forepart of the side panels to eliminate a source of leg injuries to young animals.

The first bison calves were noted on April 18, when two were seen with their mothers in the head of Pauline Creek. By April 29, a total of 26 calves could be counted in both herds. All 91 calves born survived, for an initial production of 85 percent from 107 cows of calving age. While imbalanced sex ratios are not uncommon in newborn calves, the ratio that developed this year was certainly unusual - 36 males:55 females, or 40 percent males to 60 percent females (1:1.5). This accounts for the imbalanced herd sex ratio in favor of females which existed at the end of the year. Annual production data recorded since 1954 is summarized on the following page.

Range Herd #1, comprising 189 animals and approximately 164 animal units, was released into the Upper South Range. Herd #2, consisting of 137 animals and about 120 animal units, was released to the Southwest Range.

A total of 107 cows of breeding age was returned to the range, the same number as in 1967. The herd sex ratio was 46:54, male:female, or 1:1.2. While disposal quotas were established so as to maintain an approximate 50:50 herd sex ratio, the calf sex ratio mentioned earlier was sufficiently imbalanced to disrupt this objective.

ANNUAL CALF PRODUCTION
1954 - 1968



The butchering program had originally been scheduled for December 2, but was postponed so employees could attend the funeral for Maintenceman Robert Middlemist's wife. The seven animals remaining were processed by December 6. The 1968 herd reduction totaled 91 animals - the 90 adults originally scheduled, plus a bull calf donated for breeding purposes. Herd composition at the end of the year was as summarized on the following page.

2. Elk

The annual big game census conducted in February yielded 54 elk, not including the seven exhibition animals. Herd composition established on the basis of July and August counts and subsequent disposal data is summarized on page 13.

A total of ten calves were observed, for a calf:adult cow ratio of 1:1.21, and a calf:total cow ratio of 1:3.1. At the end of the year, the adult segment of the population consisted of 40 percent males and 60 percent females or a ratio of 1:1.5.

3. Mule Deer

The population at the beginning of the year was estimated at 230 animals. Known natural losses totaled four, including two evidently killed by dogs or coyotes and two which died from unknown causes. The last of the bucks wintering in the headquarters area dropped its antlers on March 2, although one buck was seen on the range with antlers intact on March 12. A two-and-a-half-year old headquarters buck identifiable by a lop-ear carried one antler for 41 days after dropping the first. Composition and disposal data is summarized on page 14.

The fawn:adult doe ratio was 66:100, or 1:1.5. The fawn:doe ratio was 53:100, or 1:1.9. The adult segment of the post-disposal population consisted of 49 percent males and 51 percent females, or a ratio of 1:1.04.

4. White-tailed Deer

The total number of white-tails inhabiting the refuge remains a matter of conjecture. Information obtained during the annual census adds little to the task of estimating total population levels. The original estimate of 200 deer was later revised to a pre-fawn level of 150 on the basis of general field observations (admittedly arbitrary and a matter of judgement). Composition and disposal data is summarized on page 14.

The computed fawn:adult doe ratio was 125:100, or 1.3:1. The fawn:doe ratio was 68:100, or 1:1.5. The adult segment of the post-disposal population consisted of 60 percent males and 40 percent females, or a ratio of 1:.7. We experienced difficulty obtaining good composition data on this species, and have little confidence in the computations presented in this report. They should be interpreted accordingly.

BISON HERD COMPOSITION, DECEMBER 31, 1968

Age Groups	Range Herd #1				Range Herd #2				Total Herd*			
	Male	Female	Total	Animal Units	Male	Female	Total	Animal Units	Male	Female	Total	Animal Units
Calves	15	37	52	15.6	20	17	37	11.1	35	55	90	27.0
Yearlings	16	4	20	13.6	6	11	17	10.8	22	15	37	24.4
2 year olds	11	12	23	20.6	5	5	10	9.0	16	17	33	29.6
3 year olds	10	5	15	17.5	3	5	8	8.4	13	10	23	25.9
4 year olds	15	7	22	27.3	13	6	19	23.6	28	14	42	51.8
5 year olds	5	6	11	13.4	7	11	18	21.1	12	17	29	34.5
6 year olds	0	6	6	6.0	1	3	4	4.7	1	9	10	10.7
7 year olds	3	6	9	11.1	5	1	6	9.5	8	7	15	20.6
8 year olds	6	5	11	15.2	2	4	6	7.4	9	9	18	24.3
9 year olds	1	7	8	8.8	2	2	4	5.6	3	9	12	14.4
10 year olds	0	1	1	1.0	1	4	5	5.8	1	5	6	6.8
11 year olds	0	5	5	5.0	0	0	0	0	0	5	5	5.0
12 year olds	0	1	1	1.0	0	0	0	0	0	1	1	1.0
13 year olds	0	1	1	1.0	0	2	2	2.0	0	3	3	3.0
14 year olds	0	0	0	0	0	1	1	1.0	0	1	1	1.0
4 plus **	4	0	4	6.8	0	0	0	0	4	0	4	6.8
TOTALS:	<u>86</u>	<u>103</u>	<u>189</u>	<u>163.9</u>	<u>65</u>	<u>72</u>	<u>137</u>	<u>120.0</u>	<u>152</u>	<u>177</u>	<u>329</u>	<u>286.8</u>

*Includes one 8 year old bull, one 4 year old cow and one female calf left in exhibition pasture, totaling 2.9 a.u.

**Exact age unknown.

ELK HERD COMPOSITION AND DISPOSAL SUMMARY - 1968

<u>Sex and Age Class</u>	<u>Range</u>			<u>Exhibition Pasture</u>			<u>Total</u>	
	<u>Pre-Disposal</u>	<u>Disposal</u>	<u>Balance</u>	<u>Pre-Disposal</u>	<u>Disposal</u>	<u>Balance</u>	<u>Pre-Disposal</u>	<u>Post-Disposal</u>
Adult Male	13	3	10	2	0	2	15	12
Yearling Male	9	3	6	2	2	0	11	6
Adult Female	21	7	14	2	0	2	23	16
Yearling Female	10	0	10	1	0	1	11	11
Calves	10	2	8	0	0	0	10	8
	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
TOTAL:	63	15	48	7	2	5	70	53

MULE DEER HERD COMPOSITION AND DISPOSAL SUMMARY - 1968

<u>Sex and Age Class</u>	<u>Pre-Disposal</u>	<u>Disposal</u>	<u>Post-Disposal</u>
Adult bucks	92	24	68
Yearling bucks	23	10	13
Adult does	92	20	72
Yearling does	23	12	11
Fawns	61	0	61
TOTAL:	<u>291</u>	<u>66</u>	<u>225</u>

WHITE-TAILED DEER DISPOSAL AND HERD COMPOSITION SUMMARY - 1968

<u>Sex and Age Class</u>	<u>Pre-Disposal</u>	<u>Disposal</u>	<u>Post-Disposal</u>
Adult bucks	64	15	49
Yearling bucks	27	4	23
Adult does	32	10	22
Yearling does	27	1	26
Fawns	40	2	38
TOTAL:	<u>190</u>	<u>32</u>	<u>158</u>

5. Bighorn Sheep

The exact status of the sheep population was unknown at the end of the year. We went into the year with an estimated 70 animals, based on 1967 composition counts. Known natural losses totaled two, one four year old ram found dead with horns entangled in the Sheep Pasture fence, and one animal identified only by a large piece of hide. One 5 to 6 year old ewe with an infection and tumor-like growth in the brain was collected for humane reasons in Trisky Creek on May 16. The animal was obviously in considerable pain, although continuing to feed as evidenced by a stomach full of chokecherry and mockorange leaves. She was without fetus. Cause of the disorder could not be determined. Six adult rams and nine adult ewes were live-trapped on May 5 for transplanting to Teakettle Mountain east of Columbia Falls, Montana in cooperation with the State Fish and Game Department. The animals were hauled to the bison corrals that evening, and weights and measurements taken the following morning in conjunction with Graduate Student Steve Berwich's sheep study. The information obtained is summarized in Section V - Research.

Periodic reports subsequent to their release on Teakettle Mountain indicated that the animals dispersed in all directions from the release site, and the introduction is considered a failure by Fish and Game Department personnel.

As a matter of record, the sheep were trapped inside the 1,000 acre Sheep Pasture after they had been attracted to within range of the trap with alfalfa hay. There was about six inches of snow on the ground during the baiting period, and the animals responded extremely well to the hay. On January 12, one man checking the bait discovered a band above the wing fence, and walked 18 head into the trap. The sheep were restricted to the Sheep Pasture, pending improved weather conditions on the released site. The day before they were to be trapped for shipment, 17 head were found bedded down in the mouth of the trap. They were again walked in by men on foot!

The refuge population was reduced by a total of 18 animals, which should have left a balance of approximately 53 sheep. Despite several attempts at rather comprehensive composition counts during the summer months, the greatest number of sheep counted subsequent to the 55 counted on the annual census in February was 31 observed on October 11. They comprised 13 rams, 14 ewes and 4 lambs. A total of six separate lambs was recorded earlier, which would give us a total known population of 33 animals. One or more of the following explanations account for the discrepancy: (1) composition data upon which 1967 population estimates were based may have been incorrect (not too likely, although certainly possible); (2) we may simply have missed the animals unaccounted for; or (3) the "missing" animals may have migrated to areas outside the refuge boundary. This is entirely possible, as we know of five animals that apparently jumped the fence in the southeast corner of the range above Ravalli. Four of these, one large ram and three ewes, were walked back in through the old subheadquarters gate. The fifth was an adult ewe last

^{seen} heading into the canyon east of Ravalli. We also received an unverified report of five sheep seen in Valley Creek, about one to two airline miles south of the refuge, an area where native sheep do not occur. Counts scheduled for early 1969 should clarify the status of this species.

6. Antelope

On the basis of July and August composition counts, the structure of the antelope population was considered to be as follows at the end of the year:

Bucks	-	33
Does	-	30
Fawns	-	21
Total:		<u>84</u>

The ratio of adult bucks to adult does was 1:1.1, or 53 percent males to 47 percent females. The fawn:doe ratio was 1:1.4, or 70:100.

7. Rocky Mountain Goats

The goat population continued to increase, with the addition of two kids. It now totals nine animals. They were rarely seen during the year, and spent most of their time in the southwest section of the refuge.

8. Longhorn Steers

The exhibition longhorn "herd" remains at four head, with no changes during 1968.

9. Black Bear

A black bear spent the spring and summer months in the head of Elk Creek and adjacent areas, and accounted for an unusually high number of bear observations. The animal was first seen during the annual saddle club ride on May 26. It was later frequently seen by the fence crew working in that area during June and July, and approached to within 50 yards of a member of the crew on June 25. Presumably the same bear was observed feeding on an old deer carcass in the head of Trisky Creek on July 3.

D. Fur Animals, Predators, Rodents and Other Mammals

Coyote observations are now a common occurrence on the Bison Range, where they were rather rare as recent as three years ago. Their response to protection is rather amazing. Two pups were flushed from a new den site in the Alexander Basin on July 6, and an adult with three pups were subsequently seen quite often in that general area. It is estimated that ten to fifteen animals were using the refuge during the fall surplus animal disposal period. These animals should eventually exert a very beneficial influence on big game surpluses that develop each year.

Two bobcats were recorded, one on March 1 and the other on August 13. Both were seen in the Sheep Pasture and were distinguishable by their relative size.

Badgers appeared somewhat more common. The striped skunk population was reduced from 1966-67 levels. No doubt the removal of the large headquarters wintering population last year had considerable bearing on the noticeable lack of activity in that area.

Porcupines were very abundant throughout the range, and damage to ponderosa pine trees became apparent in some areas. Where damage occurred in isolated trees or small stands of trees near the tour route or other areas where the preservation of such trees is especially desirable, an effort was made to eliminate the animals. Six were removed in this manner.

Sixty degree weather in February prompted a good deal of early rodent activity. Three marmots were sunning themselves on the clay banks north of Mission Creek on February 26. Yellow pine chipmunks were out the next day, and the first observed Columbian ground squirrel was stirring on March 4.

The colony of yellow-bellied marmots located in the storage area on the north side of Mission Creek became extremely well populated. A total of 25 individuals was counted. When the animals began to defile the storage and equipment buildings on the south side of the stream, a live-trapping project was initiated. Nine juveniles and three adults were live-trapped with "Hav-a-Heart" traps and fresh lettuce bait on May 30. They were released in the rocks west and above the road in lower Trisky Creek, in the NE $\frac{1}{4}$, Section 25, R21W, T18N, in an effort to establish a colony in a somewhat more natural environment. The animals were never seen again, and the fate of this introduction remains in doubt.

The marmot colony near Beed Springs also apparently experienced a good production year, as ten were seen there by a road maintenance crew member in May.

Mountain cottontails remained quite common, and a varying or snowshoe hare was reported seen on Highpoint July 18. Mouse populations were quite low throughout the refuge.

E. Hawks, Eagles, Owls, Ravens, Magpies

Population levels of common hawks and owls remained little changed from previous years. Two prairie falcon observations were made, one on February 16 and the other on February 21. A Cooper's hawk was seen on February 26, and another one with a meadowlark kill in its talons on May 9.

The wintering population of golden eagles totaled five birds, and two pair appeared to be summer residents. The nest on the north slope of Highpoint was inactive, and no other nest sites were located. These birds undoubtedly nested on the refuge, and efforts to locate their nests will continue.

Eight osprey were seen on the Flathead River just west of the refuge during a boat trip on July 3. There were four pair, with two pair attending nests on the section of river between Dixon and the Moiese Valley.

Ravens and crows were seen only occasionally, and magpies were common.

F. Other Birds

Flocks of 50 to 200 Bohemian waxwings were common along Mission Creek and the Jocko River during the mid-winter months. A flock of 55 cedar waxwings was seen on the Jocko on June 12, and 50 were observed feeding on juniper berries along Mission Creek on October 12.

Snow buntings were observed east of Highpoint on February 13, and again on Wild Horse Mesa on November 6. A flock of red crossbills was reported near Highpoint on July 1. Groups of 10 to 20 mountain bluebirds were seen occasionally near Highpoint during March and April.

A common nighthawk nest with two eggs was found north of the bison corrals on June 21. Five black swifts were seen in the same area on July 16. Two observations of a single pileated woodpecker were made in late July. Both were in the Pauline drainage.

The first migrant starling was seen on February 20, and this species was much less common in the headquarters area during the nesting season than previously. There was an apparent correlation with an influx of nesting Brewer's blackbirds, which vigorously defended their territories to the exclusion of starlings.

Tree swallows were first seen at headquarters on April 15; rough-wing swallows on May 16; and cliff swallows began appearing in late May.

G. Fish

Nothing to report.

H. Reptiles

The first spring rattlesnake observation was made on March 5 at the CCC Inscription Rock den site. Five snakes occupied the den through April, but had dispersed by May 17. One snake was noted at the den on October 1. Three were reported killed along the exhibition pasture and range tour roads. Three were also collected alive for donation to the Los Angeles Zoo. The snake pit den site apparently remained unused, as no snakes were seen there during the year.

I. Diseases

1. Buffalo

There were no known natural or disease-oriented losses in the bison herd during 1968. A calf with an abcess and a lame bull were brought

to the corrals and treated on August 26, both recovered. One of the special marked age-weight study bulls was found with a broken hind leg on August 30. Cause of the break was unknown. He was collected for humane reasons.

Tests of blood samples taken from butchered animals were all negative for brucellosis and leptospirosis. The initial tests for anaplasmosis were also negative, but State Diagnostic Lab personnel wished to make an additional test, and the final results had not been received as this was being written.

Keratitis continued to be a problem, although fewer animals were affected than in 1967. Four animals suffering from varying degrees of blindness were noted during roundup. They were all culled and subsequently butchered.

2. Elk and Deer

Blood serum samples were submitted for testing from the elk and deer collected during the fall disposal program. All samples tested negative for brucellosis and anaplasmosis. Elk samples tested negative for leptospirosis, but one three-and-a-half year old whitetail doe tested as a reactor and another doe of the same age and species tested suspect for this disease.

3. Bighorn Sheep

Tests of blood samples taken from the 17 sheep live-trapped in May were all negative for anaplasmosis, brucellosis, and leptospirosis. A bacteria identified as Staphylococcus aureus was isolated from nasal swabs taken.

4. Antelope

Nothing to report.

5. Vegetation

The tent caterpillar infestation in chokecherries east of Highpoint noted in the 1967 report killed large portions of most plants, but basal growth and occasional live stems persisted. The caterpillar was again present this year, but was generally limited to isolated, scattered infestations. No major damage was noted.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Refuge Work Program

a. Fence Construction and Repair

The west side of the upper Elk Lane fence was completely rebuilt

from the lower aluminum gate in Pauline to the upper cattle guard. The 197 rod fence was relocated in some sections to eliminate several unnecessary corners.

The lower section of the Lane was also renovated on the west side between Six Gates and the first bison holding pasture above the corrals. A total of 1.4 miles of big-game type fence was involved in this project.

The Sheep Pasture north boundary fence, which paralleled the self-guiding tour road through its most scenic section, was removed and relocated through Elk Creek so as to be less visible from the tour road. Some wire was salvaged and re-used from the original fence, which was one of the oldest division fences on the refuge and in an advanced stage of deterioration. The change reduced the total acreage in the Sheep Pasture from 1,068 to 683 acres. As indicated earlier, the deleted 385 acres was a very desirable addition to the Upper North Range. Over 1.4 miles of fence was involved.

Extensive bison corral renovation was accomplished. The old east pen was removed and replaced with a system of six corrals and a central chute. Steel pipe construction was used throughout the 935 lineal feet of new corral, with virtually all materials obtained from excess sources through McNary and Desert Game refuges.

All interior fencing was inspected at least once during the year, and repairs made as required. The 23 mile boundary fence was also inspected and routine maintenance performed.

Nearly all of the 52 inch metal gates installed in various division fences over the past few years have had to be rebuilt and extended, since the buffalo have been confined to range units within the deferred rotation grazing system. The gates are just low enough to encourage jumping, but too high for the animals to clear them. An 18 inch extension solves the problem.

b. Roads and Bridges

All roads were bladed once during the year, and the tour road required two additional trips with the rock rake to maintain a smooth travel surface.

Twenty-five badly needed vehicle turnouts were developed along the 19 mile tour road route to minimize traffic congestion on the one-way road, and provide parking area-viewpoints along the route. The turnouts were completed prior to the tour opening date, June 1.

c. Building Maintenance

Quarters No. 2: Two bedrooms were painted.

Quarters No. 3: Painted exterior trim on house and garage.

Building No. 4: Painted exterior stucco walls with cement paint and trim with enamel.

Building No. 11: The headquarters horse barn was re-roofed. The contract included the addition of one-half inch plywood sheeting.

Building No. 12: All exterior surfaces painted, including the roof.

Quarters No. 62: Painted all exterior wall surfaces.

Quarters No. 63: Exterior trim painted. Kitchen cabinets renovated, and kitchen and back entrance painted.

Quarters 64: Exterior and interior surfaces completely repainted. A new formica counter-top was installed in the kitchen.

All buildings were inspected by a licensed electrician for compliance with current State and Federal Electrical codes. Extensive re-wiring was required in Buildings Nos. 13, 15, 16, 17, 19 and 20. All exposed wiring in repair and equipment storage buildings was placed in metal conduit. Some minor work remains to be done.

d. Automotive Equipment Maintenance

Major repair and maintenance work accomplished included: renovation of Dodge cargo truck obtained from the Tule Lake refuge for use as a permanent fire truck; engine overhaul on pickups I-54000 and I-75650; rebuilt bucket and bucket lift chains for P and H mobile crane; design, construction and installation of SAFETY roll bars on all three wheel tractors; with necessary minor repairs and 5,000 mile preventative maintenance checks as required.

e. Miscellaneous

Springs were developed, enclosed in concrete collecting boxes and piped to concrete frost-proof troughs in Telephone and Turkey Woman Draws. The Turkey Woman spring furnishes water to a trough above the contour fence in the Upper South Range and a trough below the fence in the Lower South Range - an area where surface water has not previously been available.

With the installation of a two-way radio system on July 29, the next segment of the refuge-owned telephone system scheduled for removal was razed between the Highpoint Lookout and the slaughterhouse. This involved about 2.5 miles of the most asthetically objectionable portion of the telephone system, as it paralleled the most scenic section of the self-guiding tour route alternately for about one mile, crossing the road in three places.

The radio system consists of a 40 watt base station in the office, three 15 watt quick-change mobile units with seven vehicles equipped with quick-change mounts, and a 2 watt portable, primarily for use in the

lookout. This system provides maximum flexibility at minimum cost, and the coverage obtained is rather remarkable with our terrain. This is a narrow band, high frequency system, and "skip" problems have been negligible.

A heavy duty 8' x 16' cattle guard was installed in the service road to the storage area north of Mission Creek at headquarters.

New information signs were installed in conjunction with the tour entrance fee program. An aluminum interpretive plaque constructed for us by the Yosemite National Park sign shop was installed on a natural stone base at the Red Sleep Mountain viewpoint. The adjacent parking area was enlarged, and gravel hauled and spread.

The buried sprinkler main line in the bison exhibition pasture was extended under the road to provide for sprinkler irrigation of the longhorn pasture east of the Cow Barn.

The irrigated portions of the bison exhibition pastures were treated with fertilizer as follows: March 22 - 18-46-0 at 200 pounds per acre; May 29 - 33½-0-0 at 100 pounds per acre; and July 25 - 33½-0-0 at 100 pounds per acre. The longhorn and lower elk pastures were also treated during the May 29 and July 25 applications, and should be included in any future fertilization program.

2. Kickinghorse Job Corps Civilian Conservation Center Work Program

The bank sloping and stabilization project adjacent to the headquarters entrance road near Quarters No. 2 was completed. Top soil was hauled in and spread, a native grass seed mix applied, and a barnyard manure-hay mulch added. Two types of paper and jute mulch netting were also applied experimentally. An excellent stand of grass had become established by the end of the summer, and it was quite apparent that the more expensive jute netting was the most effective material in terms of plant establishment. It appeared that the smaller mesh size of the paper netting may have restricted light penetration, as plant density in the jute netting was much higher.

The old pit-type restrooms at the lookout were removed and a new restroom installed. Considerable work was accomplished at the Ninepipe refuge, and is discussed in that report.

B. Plantings

1. Trees and Shrubs

Approximately 200 native trees and shrubs were dug along Mission Creek and the Jocko River and transplanted in the picnic area, the headquarters and entrance meadows and headquarters area. Black cottonwood seedlings were also planted along the lower end of Pauline Creek, above the tour road crossing. We apparently have much to learn about the transplanting of native stock, as the survival rate didn't appear to be more than about 50 percent by the end of the summer.

2. Upland Herbaceous Plants

The annual accumulation of barnyard manure and waste hay was again used to mulch small bare areas adjacent to the headquarters entrance and tour roads. A layer of top soil preceded the mulch on a large bare spot next to the service road on the north side of Mission Creek. This type of application does an excellent job of revegetating such areas.

Several old gravel pits were leveled and seeded to a mixture of native grasses along Mission Creek. One pit embraced an area of two to three acres in size. It will undoubtedly take some time to revegetate these sites.

The west side of the bison exhibition pasture was plowed under in the fall of 1967, and the 12 acres reseeded to a mix of 50 pounds alta fescue:15 pounds ladino clover:40 pounds orchard grass in the spring of 1968. An excellent stand had become established by late summer, although Canada thistle was a serious problem. The thistle was clipped several times during the summer, in a partially successful effort to control it.

C. Collections and Receipts

1. Seed and Other propagules

Grass seed purchased for the various reseeded projects discussed earlier is listed on the NR-7.

2. Specimens

Specimens collected during the period included the three live rattlesnakes donated to the Los Angeles Zoo, and one adult mule deer doe for the special University of Montana course for State game wardens.

D. Control of Vegetation

1. Biological Control

The goatweed beetle, Chrysolina quadrigemina, remained generally widely distributed throughout the range, but in very limited numbers. No significant control of goatweed by beetles was noted.

2. Chemical Control

Results of last years ground spraying on goatweed in the Pauline drainage were generally quite good, with actual kills varying from 95 to 100 percent. The aerial spraying done above the contour fence in the Alexander Basin was successful, but small patches and isolated plants were evidently missed due to the nature of the terrain. On those areas where the spray solution could be properly applied, the actual kill consistently approached 100 percent. However, some replicate ground control work will have to be done in this area beginning next year.

Locations of annual goatweed control programs since the use of chemicals was again initiated in 1965 are summary plotted on the map on the following page.

The use of straight 2,4-D amine for the control of Canada thistle was discontinued due to the poor results obtained last year and in previous years. A 1:1 mixture of Tordon and 2,4-D amine was used for spot control of thistles along roadsides. The initial results appeared excellent.

E. Planned Burning

None.

F. Fires

The first and only range fire occurred on April 30 and was declared out on May 1. The fire originated in slash burning on adjoining private land, and was spread by extremely unusual winds with gusts to 60 or 70 miles per hour.

The fire consumed approximately 50 acres along the south boundary, and was contained just south of the densely timbered elk range in the southwestern portion of the refuge. Major damage involved the burning of boundary fence posts, and destruction of stream bottom habitat along the Jocko.

The fire caught the refuge and Bureau of Indian Affairs fire control organization almost totally unprepared, and it was only through the cooperative efforts of both agencies that the fire was brought under control as quickly as it was.

IV. RESOURCE MANAGEMENT

A. Surplus Buffalo Disposal

1. Live Disposal and Meat Sales

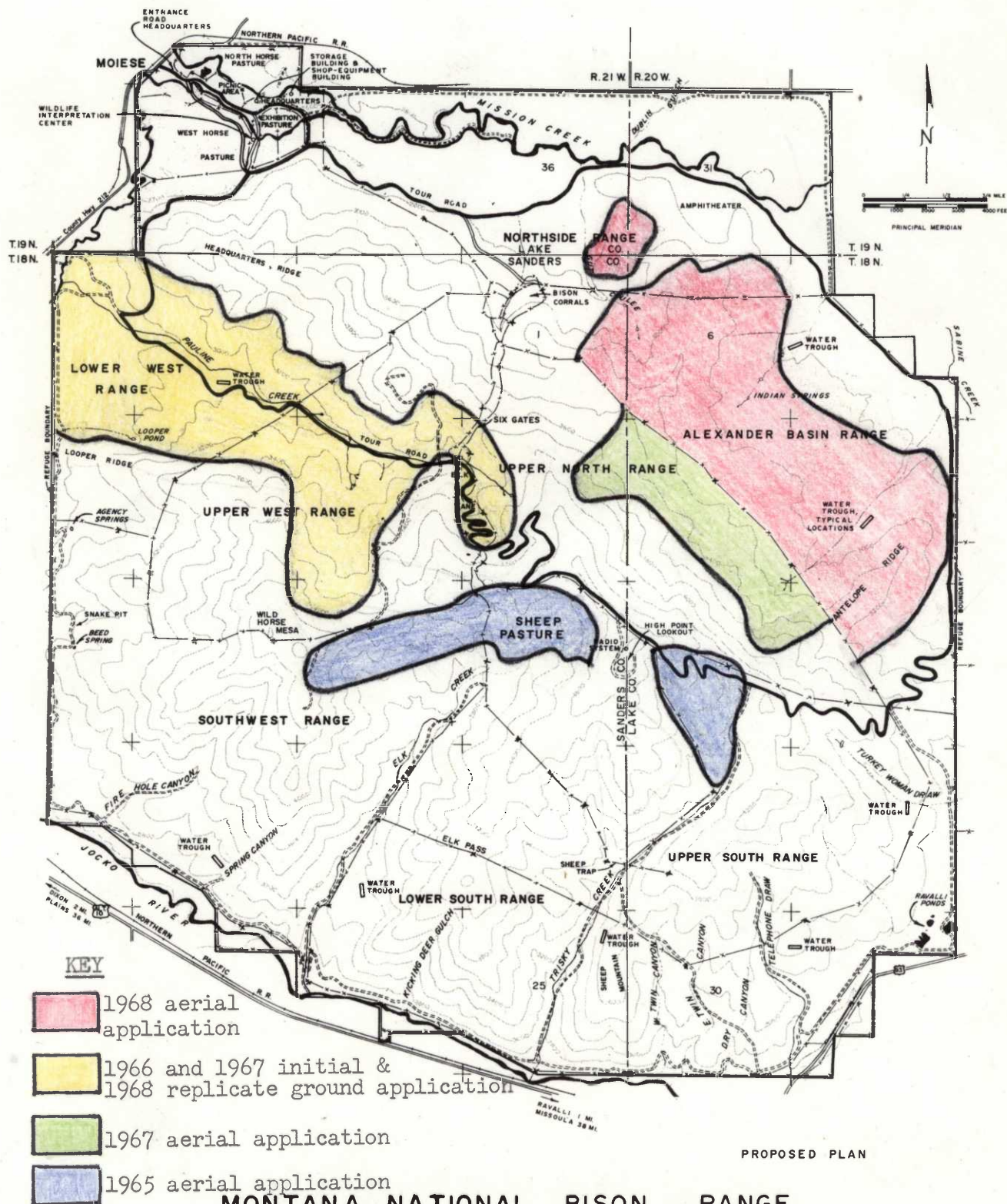
The disposal program involved 91 animals - the 90 originally scheduled for sale, plus one male calf donated to the State of Wyoming for use as an eventual breeding bull in their Hot Springs State Park herd.

Eighty animals were sold alive on the basis of a sealed, competitive bid sale, as in 1967. A total of 28 bids was received, with the bid awards to nine buyers totaling \$31,773.96, or an average of \$397.17 each as summarized below:

<u>Number</u>	<u>Age Group</u>	<u>Total Bids</u>	<u>Average/Animals</u>
45	Yearlings	\$ 17,219.32	\$ 382.65
9	Two year olds	3,644.76	404.97
10	Three year olds	3,881.16	388.12
3	Four year old bulls	847.16	282.39
13	Four to nine cows	6,181.56	475.50

APPROXIMATE LOCATION OF PRINCIPAL GOATWEED CONTROL PROGRAMS

1965-1968



This was the first time that live animals over two years of age had ever been sold at the range, and all age groups were handled with relative ease. We found the older bulls need present no special handling problems if buyers are equipped to haul them in individual compartments.

On the basis of this year's experiences with the live sale program, it is planned to phase out the buffalo butchering program entirely beginning in 1969. Animals that may have to be destroyed for humane reasons will be disposed of locally, as provided for in current policies.

The club meat applications received were subjected to a public drawing on October 2, and 16 clubs were drawn for seven of the ten carcasses processed. There were 39 applications. Three carcasses were donated to local schools through the Flathead Tribe, as in the past.

2. Sale and Donation of Hides

Seventeen hides and two head mounts with hides from the 1967 disposal program were sold. One skull and hide were donated to Southern Oregon College, Ashland, Oregon, and one hide to the Wyoming State Archives and Historical Department from the 1968 program. The balance of the hides will be sold in early 1969.

3. Sale and Donation of Skulls

Two skulls were sold in addition to those mentioned above.

B. Surplus Elk and Deer Disposal

Seventeen elk and 98 deer taken during the fall disposal were distributed to Montana schools for use in the hot lunch program. One elk was again donated for use in the Lake County 4-H Council Junior Fair, in accordance with prior authorization. A handling charge of 15¢ per pound of dressed meat was charged for both species to help defray collection costs. Estimated comparative annual costs for this program is summarized below:

	<u>DEER</u>				<u>ELK</u>			
	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
Cost/Animal	13.88	12.86	11.77	17.27	31.96	35.14	20.53	32.86
Revenue/Animal*	7.44	5.94	8.48	17.19	28.25	27.65	34.12	41.77
Difference:	-6.44	-6.92	-3.29	.08	-2.71	-7.49	13.59	8.91
Cost/# to Collect	.15	.19	.18	.18	.12	.15	.10	.13
Revenue/Pound*	.08	.09	.13	.18	.11	.12	.16	.16
Difference:	-.07	-.10	-.05	.00	-.01	-.03	.06	.03

*Includes handling charge plus average receipts from hide sales.

2. Sale of Elk and Deer Hides and Antlers

A total of 29 elk hides, 137 deer hides and 15 deer antlers from

the 1967 program were sold. Sixty-six white-tail deer tails from both 1967 and 1968 were also sold.

C. Proceeds of Sales

Receipts from sales for the period January 1 through December 31, 1968 were as follows:

<u>ITEM</u>	<u>AMOUNT RECEIVED</u>
Live buffalo	\$31,773.96
Butchered buffalo	1,680.00
Deer & Elk meat	2,089.65
Buffalo hides	412.50
Elk hides	105.85
Deer hides	283.00
Deer tails	23.10
Skulls and antlers	180.51
Employee's horse grazing fees	28.00
Employee's wood purchases	49.00
Marsh concession	634.39
Golden Eagle Passports	1,862.00
Daily entrance permits	3,320.00
Sale of scrap	780.98
Sale of surplus, used property	57.00
Sale of used vehicles	453.00

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Buffalo Weight Studies

1. Age-Weight Relationships in October

Data collected was summarized in last year's annual report. This information was subsequently used to develop animal unit weight equivalents or conversion factors. The resulting table is presented on the following page.

No additional weights were obtained during the current reporting year.

2. Age, Weight, and Longevity

The collection of information for this special study was continued during roundup.

B. Buffalo Measurements

None taken this year.

C. Buffalo Pregnancy and Lactation

Pertinent information recorded during butchering.

BISON ANIMAL UNIT WEIGHT EQUIVALENTS*

Age Group	ANIMAL UNITS			
	Male		Female	
	<u>Actual</u>	<u>Adopted</u>	<u>Actual</u>	<u>Adopted</u>
Calves	.34	.3	.31	.3
Yearlings	.70	.7	.60	.6
2 year olds	.99	1.0	.79	.8
3 year olds	1.26	1.3	.89	.9
4 year olds	1.42	1.4	.93	.9
5 year olds	1.64	1.6	.94	.9
6 year olds	1.67	1.7	.98	1.0
7 year olds	1.71	1.7	1.02	1.0
8 year olds	1.74	1.7	1.01	1.0
9 year olds	1.80	1.8	.99	1.0
10 plus	**	1.8	**	1.0

*Based on 1,000 pound animal unit and age-weight study summarized in 1967 Narrative Report.

**Limited samples taken in 10 plus age group indicate animal unit equivalents adopted reasonably accurate for practical purposes.

Note: For animals left on range during roundup and identified as "4 plus", use 1.7 AU figure.

The average weight equivalent factor would be approximately .87 or 1.2 bison per 1,000 pound AU.

D. Sexual Behavior of Bison

Investigator Dr. Dale F. Lott worked with the herd throughout the breeding season. He voiced a critical need for marked cows, and refuge personnel subsequently color ear-tagged ten at roundup. Dr. Lott submitted his first progress report in November, copies of which were distributed to appropriate offices.

E. Ecological Comparisons of Social Organization in Bison

The final report was not received as originally scheduled, and is now expected in early 1969.

F. Behavior of Cow and Calf Bison

The thesis completion data was postponed until January, 1969.

G. Average Weights and Weight Relationships of Deer and Elk

The collection of field data was completed in 1967, and an analysis finally completed late in the current year. The information is summarized on the following pages.

H. Bighorn Sheep Weights and Measurements

When plans were firmed up for the live-trapping and transplanting of fifteen bighorns, University of Montana graduate student Steve Berwick requested the opportunity to obtain weights and measurements. Mr. Berwick was studying the Rock Creek sheep herd, but was interested in comparative data. We had planned to gather as much information as possible from this group of animals, so naturally agreed. The data obtained is summarized on page 33.

I. Refuge Herbarium

All of the nearly 400 specimens collected in conjunction with this study were mounted for inclusion in the refuge herbarium by the young lady employed under the college work study program during the summer months. Additional herbarium cases will have to be constructed before this phase of the project can be completed.

Investigator Dr. John H. Thomas' plans to submit this study for publication in the Journal of the California Botanical Society early in 1968 were postponed. It is now scheduled for publishing in 1969.

J. Range Condition and Trend

Refuge personnel established eleven Parker 3-step transect clusters to complete a system which now comprises two clusters in each of the eight basic grazing units. Three 100 foot transects were established for each of the eleven clusters, although more would have been desirable. This system of transect clusters should continue to be reviewed, expanded and improved.

MULE DEER AGE - WEIGHT RELATIONSHIPS
1952 - 1967

AGE	SEX	LIVE WEIGHT			HOG-DRESSED WEIGHT			DRESSED WEIGHT		
		# ANIMALS	AVERAGE	RANGE	# ANIMALS	AVERAGE	RANGE	# ANIMALS	AVERAGE	RANGE
FAWN	M	18	74.5	54-100	22	50.5	24-75	42	41	25-56
	F	14	63.5	50-80	18	42.5	30-56	39	37	22-47
1½	M	134	135	95-177	140	104	70-140	218	80	36-118
	F	76	125	95-168	84	94.5	70-139	127	73.5	30-99
2½	M	67	160	110-230	81	124	95-165	126	94.5	68-135
	F	70	133	110-165	78	101	75-125	111	78	57-105
3½	M	74	170	125-240	80	141	105-195	114	113	70-171
	F	83	142	100-175	94	105	85-135	163	81.5	62-112
4½	M	58	212	120-265	65	167	95-220	92	127	72-179
	F	49	143	105-175	53	107	80-135	88	80	57-115
5½	M	24	212	175-269	24	170	130-225	34	133	94-192
	F	23	155	140-185	25	114	100-145	38	80.5	68-107
6½	M	9	209	185-265	11	154	135-210	17	127	89-165
	F	6	144	125-160	8	102	85-125	12	82	70-94
7½	M	1	280		2	180	125-235	5	130	98-192
	F	3	137	130-142	5	95	75-105	7	75.6	65-90
8½	M	4	242	195-270	6	183	150-235	11	141	105-187
	F	5	147	125-160	6	107	95-116	8	85	74-98
10 +	M				1	135		4	129	108-170
	F	1	145		2	105	105	6	74.5	70-85

WHITE-TAIL DEER AGE - WEIGHT RELATIONSHIPS
1952 - 1967

AGE	SEX	LIVE WEIGHT			HOG-DRESSED WEIGHT			DRESSED WEIGHT		
		# ANIMALS	AVERAGE	RANGE	# ANIMALS	AVERAGE	RANGE	# ANIMALS	AVERAGE	RANGE
FAWN	M	3	80.3	66-90	3	57	48-64	17	46	30-55
	F	3	68	50-80	3	53	45-60	15	41.5	29-50
1½	M	54	130	90-160	55	97.5	59-130	77	75.5	45-114
	F	39	113	85-135	40	84.6	65-100	72	65.5	42-89
2½	M	34	148	120-180	34	115	86-140	43	91	69-114
	F	30	115.3	90-140	31	86	62-115	57	63.5	52-95
3½	M	35	171	130-235	38	138.5	107-195	49	104.5	72-153
	F	33	156.5	105-160	36	109	65-120	65	85.5	50-100
4½	M	29	194	160-250	31	158	122-205	41	124	84-175
	F	13	131	95-155	13	94.5	65-125	19	74	52-100
5½	M	11	188	145-220	12	155	105-195	13	144	80-153
	F	3	128	125-135	3	91.5	90-95	9	72.5	59-81
6½	M	4	225	210-245	4	191	175-210	5	144	120-160
	F	3	134	115-170	3	95.7	72-135	4	89	58-115
7½	M	2	165	165	2	122.5	115-130	2	100.5	94-107
	F	3	135	120-145	3	100	80-115	6	71.5	59-90
8½	M									
	F	4	115	100-130	4	78	72-85	4	62	55-66
10 +	M									
	F	2	108	100-116	2	72.5	70-75	4	59.7	59-60

ELK AGE - WEIGHT RELATIONSHIPS
1955 - 1968

AGE	SEX	LIVE WEIGHT			HOG-DRESSED WEIGHT			DRESSED WEIGHT		
		# ANIMALS	AVERAGE	RANGE	# ANIMALS	AVERAGE	RANGE	# ANIMALS	AVERAGE	RANGE
CALF	M	3	217	195-210	4	167	140-210	12	136	100-175
	F	4	200	140-230	5	154	90-195	13	128	70-155
1½	M	9	423	370-536	22	302	235-345	54	246	189-305
	F				11	275	184-300	31	230	175-311
2½	M	1	575	575	11	388	320-425	18	309	238-340
	F	3	425	408-445	4	312	295-332	33	272	205-340
3½	M	1	749	749	4	455	408-480	22	335	262-402
	F	5	472	426-518	4	338	286-375	30	267	232-310
4½	M	7	750	680-805				18	375	266-433
	F	3	469	452-478	7	355	315-380	29	277	240-318
5½	M	2	820	790-850				5	416	404-444
	F	2	580	578-582	5	371	315-400	18	292	250-355
6½	M									
	F				1	385	385	5	287	259-316
7½	M	1	760	760	2	536	525-547	4	417	372-445
	F							1	255	255
8 +	M	2	810	770-850				4	394	348-440
	F	1	434	434	2	335	275-395	8	279	240-330

BIGHORN SHEEP AGE, WEIGHT AND MEASUREMENTS

Collected March 6, 1968

National Bison Range

Tag Number	Sex	Age By		Weight	Measurements (Inches)										Remarks
		Horn	Ring		Total Length	Hind Foot	Neck at Base	Neck at Smallest Circ.	Tail	Chest Girth	Ear	Horn			
												Length(1)	Base	Tip(2)	
3501-02	F		4	142	56.0	15.25	20.0	14.0	3.5	43	4.5	-	-	-	Not lactating
03-04	M		3	175	66.5	17.0	21.0	17.5	4.75	43	4.75	22.5	12	19	Ticks: <u>Dermacenter Andersoni</u>
05-06	M		6	187	72.0	17.5	26.5	19.0	5.0	44	4.5	30.5*	14.25	19.5	Ticks as above. *Broomed.
07-08	F		3	105	63.0	15.75	21.5	13.0	4.75	38.75	4.5	-	-	-	Ticks as above.
09-10	F		2	120	63.0	16.0	19.5	13.75	4.5	38.5	4.5	9.0	6.0	13.75	Ticks as above.
11-12	M		2	130	65.5	16.5	21.5	15.5	4.75	39.5	5.0	17.5	10.75	19.5	
13-14	F		5	132	64.0	16.75	23.0	14.5	5.0	42.0	4.5	11.0*	5.75	16.0	Slightly broomed.
15-16	M		9	201	65.5	18.0	26.5	19.5	4.75	45.5	4.75	32 1/8	13 5/8	19.0	*Full curl broomed. Ticks, porcupine quills between eyes
17-18	M		2	127	65.0	17.0	22.0	14.75	5.0	38.5	4.5	18.75	11	20.75	
19-20	F		7	130	62.5	16.0	18.5	15.0	4.75	40.0	4.5	11.5	6.75	16.75	Ticks as above.
21-22	M		2	131	55.5	17.75	20.0	15.5	5.5	38.5	4.5	17.5	10.75	19.0	
23-24	F		5	117	60.5	15.5	18.5	13.0	3.75	38.0	4.5	12.0	6.0	15 1/8	Ticks as above.
25-26	F		5	-	58.75	16.0	19.5	13.75	5.0	41.5	4.5	10.0	5.75	13.5	No weight.
27-28	F		6	104	59.5	15.75	15.0	12.0	4.75	36.5	4.75	9 5/8	5.5	11.5	Heavy tick inf.
29-30	F		6	137	62.5	16.0	18.0	14.75	4.5	38.5	4.5	11.0	6.75	14 7/8	
31-32	M		1	110	61.0	16.5	18.5	14.0	4.0	37.5	4.75	14.5	9 1/8	18.5	Released - refuge.
33-34	M		1	98	56.5	16 3/8	17.5	13.5	5.5	38.0	4.5	15.5	9.5	16 3.8	Released - refuge.

(1) Outer circumference

(2) Tip to tip

A series of 52 shrub photo points and 11 conifer reproduction photo points were also established. Each point was documented on both color (slides) and black and white film.

K. Range Interseeding Study

The plots established in 1966 were again "read" by Range Extension Specialist Don Ryerson and his field crew from Montana State University. A progress report in the form of 1967 field study summaries was received.

L. Re-introduction of Columbian Sharp-tailed Grouse

Two different efforts were made to trap sharptails on their dancing grounds north of St. Anthony, Idaho in cooperation with Montana and Idaho Fish and Game Department personnel. Grouse researcher Bob Brown directed the crews.

Idaho department personnel had never located sharptail dancing grounds in the area, so this was our first objective. Brown located four grounds with 10 to 20 birds per ground the first morning. Unfortunately, only males were attending the grounds. Two males were subsequently trapped for comparative measurements, and eventually released on the Bison Range (after being taken to the University of Montana for blood analysis work).

While a few females were seen on the grounds during the second trip, the birds were so widely scattered that the trapping technique worked out for the eastern variety of sharptails by Brown failed to work.

Plans now are to attempt bait trapping winter concentrations. A late-January, 1969 trapping date is planned.

M. Waterfowl Banding

A total of 243 ^{wallards} ~~Canada geese~~ was cannon-netted and banded on Mission Creek near headquarters in conjunction with the quota established for this portion of the flyway. The operation cost \$.53 per bird.

VI. PUBLIC RELATIONS

A. Recreational Uses

An estimated 73,500 people visited the refuge during the year. This represents a 9.7 percent increase over the 67,000 recorded in 1967. The greatest period of use occurred during the months of June through August, when 61,312 visitors or 84 percent of the total was recorded. The highest monthly total occurred in August, the lowest in January. The busiest single day was July 20, when approximately 2,000 people visited the area.

The 19 mile self-guiding tour season extended from June 1 through September 30, with the entrance gate open from 8 a.m. until 7:30 p.m.

The exit gate was closed at 9:00 p.m. Forty percent or 29,172 of the refuge visitors drove the tour route. Use by month was: June - 24 percent; July - 31 percent; August - 32 percent; and September - 13 percent. Use by day was:

Monday - 11 percent
 Tuesday - 12.1 percent
 Wednesday - 12 percent
 Thursday - 12.9 percent
 Friday - 13 percent
 Saturday - 17 percent
 Sunday - 22 percent

Change of the refuge entrance fee requirement to a tour entrance fee met with considerable public favor, and eliminated virtually all problems experienced with the fee program last year. The self-service fee installation used worked quite well, and required nominal attendance. It was interesting to note that use by local residents of the headquarters complex returned to pre-1967 levels.

B. Refuge Visitors

Jan. 6 Gerry Atwell, Wildlife Research Unit, U of M, (numerous visits)
 Jan. 18 Monte Thompson, Motorola Co., California (discuss radio setup)
 Jan. 19 Mr. & Mrs. Owen Vivian, Red Rock Lakes NWR (courtesy visit)
 Jan. 19 Dr. John Corcoran, Dept. of Ag. Vet., St. Ignatius (numerous visits)
 Feb. 1 Wilfred P. Schoenberg, S.J., Spokane, Pacific N.W. Indian Center, Gonzaga University (history)
 Feb. 2 George Devan, Stevensville, Ref. Mgr. Ravalli NWR (numerous visits)
 Feb. 2 K.A. Eggensperger, Thompson Falls, Editor-Publisher Sanders Co. Ledger (numerous visits)
 Mar. 5 James McLucas, Helena, State F & G (discuss sheep trapping)
 Mar. 13 Phil Lehenbauer, Portland, Wildlife Services (several visits)
 Mar. 13 Norton Miner, Billings, Wildlife Services (numerous visits)
 Mar. 13 Homer Ford, Portland, Wildlife Services (courtesy call)
 Mar. 13 Del Rasmussen, Portland, Fishery Services (courtesy call)
 Mar. 13 Gene Allan, Kalispell, Fishery Services (courtesy call)
 Mar. 13 Jack D. Larnoyeix, Bozeman, Fish Hatchery Develop. Cent. (courtesy)
 Mar. 13 Jim Holway, Bozeman, Fish Hatchery Develop. Center (courtesy call)
 Mar. 13 Bob Piper, " " " " " " "
 Mar. 23 Freeman Porterfield, Creston, w/10 Boy Scouts (hike)
 Mar. 29 Joseph Zacek, Missoula, S.C.S. (numerous visits)
 Mar. 29 Robert Ross, Bozeman, S.C.S. (plan for range refresher course)
 Apr. 4 Colonists Pioneer Girls, Spokane, Loma Vista Baptist Church, 4 adults, 9 girls (talk & tour)
 Apr. 6 Clinton Cub Scouts, Clinton, 20 scouts, 4 adults (talk, tour, hike)
 Apr. 6 Boy Scout Troop 63, St. Ignatius, 24 scouts, 3 adults (hike, talk)
 Apr. 11 Melvin Morris, U of M, Missoula (numerous visits)
 Apr. 15 Bob Lambeth, Polson, State F & G (numerous visits)
 Apr. 19 Prof. Frank Evans & 15 students, Jr. College, Coeur d' Alene, Idaho (talk and tour)
 Apr. 29 Duane Robertson, Polson, Lake Co. Sanitarian (numerous visits)

May 3 Pacific Northwest Conservation Council, Missoula, about 60 (talk)
May 4 Ralph L. Allen & 20 students, Stevensville advanced biology class (talk & tour)
May 7 Cherry Valley School, Polson, 55 students, 5 adults (talk & tour)
May 8 Leon Schoonover & 100 Polson H.S. students (picnic & talk)
May 9 Ronan, grades 3 & 4, 50 students, 6 adults (talk, tour, picnic)
May 10 Saltese School, 4 adults, 12 children (tour & talk)
May 14 Charlo Lions Club, 24 members (see film of refuge)
May 14 Frank Wetherbee, Missoula, Wildlife Services (numerous visits)
May 15 Charlo Senior Class, 35 seniors (talk, tour, picnic)
May 15 Columbia Falls H.S. Biology class, 75 students (talk & tour)
May 16 David Larder, England, Photo-journalist
May 16 St. Ignatius 8th grade, 45 students (talk & tour)
May 16 Polson 5th grade, 60 students (talk & tour)
May 18 Mel Rudder & wife, Columbia Falls, Editor Hungry Horse News(num.)
May 30-
31 Mr. & Mrs. Allen Cruickshank, Florida, Na. Audubon Soc.(photos)
May 30 Dr. R. Hoffman, U of M, field trip with 15
June 6 James K. Morgan & Juan Spillet, Ida. F & G & Ass't. Leader, Utah Coop. W.L. Research Unit, resp. (photograph sheep)
June 6 George Bekeris, Washington D.C. & Dick Munding, Portland, Div. of Realty (courtest visit)
June 7 Elmo Headstart, 12 students, 6 parents (talk and tour)
June 11 Bill Browning, Helena, State Chamber of Commerce (numerous visits)
June 17 Jim Koplin, Bigfork, Biological Station w/students (numerous visits)
June 20 Frank Martin, Lewistown, Ref. Mgr. CMR, (Range Workshop)
June 20 Marvin Kaschke, Lewistown, Biologist, CMR (Range workshop)
June 20 Gene Stroops, Ref. Mgr. Benton Lake NWR (Range workshop)
June 20 Ed Bratton, Lake Co. Agent (Range workshop & numerous visits)
June 20 Ross & 15 SCS personnel, Bozeman (range workshop)
June 20 Ned Jefferies, Bozeman, Range Extension Spec. (range workshop)
June 20 Charlo Headstart group, 30 children, 10 adults (talk and tour)
June 20 Dana Schmidt, Missoula, Wildlife Services (numerous visits)
June 24 Dr. Don Jenni, U of M Biology students, 18 (talk and tour)
June 25 Dr. John Thomas, Stanford U, California (on range study)
June 25 Richard Vogl, Prof. of Ecology, Biological Station w/2 students
July 1 Dr. Jenni w/20 Nat'l. Science Foundation students (talk & tour)
July 3 Tom Smith, Portland, Realty - RO(Pablo land sale)
July 3 Bob Fisher, Portland, Federal Aid - RO (courtesy visit)
July 6 Earl R. Cunningham, Ref. Mgr. Yazoo NWR, Hollandale, Mississippi (tour of range & visit)
July 9 Dr. Dee C. Taylor, U of M, Anthropology Dept. (artifact collection)
July 12 Donald S. Doughton & Edward W. Edelbrock, Portland, Realty - RO (courtesy call)
July 13 Horizon Travelcade, various states, 14 Senior Camp Fire Girls (talk & tour)
July 15 Pete Lindburg, Des Moines, Iowa, Better Homes & Gardens writer
July 15 U of M Conference Group, approx. 40 (talk and tour)
July 19 Jim Hickman, Portland, Division of Fisheries
July 19 Larry C. Peterson, Kalispell, Division of Fisheries (numerous visits)
July 22 Dr. Dale Lott & wife, U of Calif., Davis (continue study)
July 22 Marvin Plennert, Lewistown, CMR (wetlands inventory)

July 22 Jim Morgan, Challis, Ida., Ida. F & G (photograph sheep
 July 23 Mr. & Mrs. John Kurtz, Ass't. Mgr. Kenai NWR (courtesy visit)
 July 24 John C. Jones, Wash. D.C., Safety Officer (SAFETY Inspection)
 July 24 Henry Baetkey, Portland, Adm. Officer, RO (SAFETY Inspection)
 July 24 Dr. R. D. Taber, U of M, w/group of 12 Speech & Hearing students
 July 24 Norval Brown & Dave Riley, Spokane, River Basins (courtesy)
 July 24 Faye Couey, Kalispell, State F & G (numerous visits)
 July 28 St. Ignatius School Reunion, approx. 600-800 (picnic)
 July 31 Laurie Fowler, Salmon-Cultural Lab, Longview, Wash. (courtesy)
 Aug. 6 Edward Chaffin, Mexican Federal Police, Los Mochis, Sinaloa,
 Mexico (taking photographs for Mexican Government)
 Aug. 8 Continental Trailways Tour, Louisiana, 25 adults (tour)
 Aug. 15 Bob Houser & family, Sacramento NWR, (courtesy visit)
 Aug. 15 Frank Jacox, RO, Portland (courtesy visit)
 Aug. 18 Dr. George Rhule, Nat'l. Park Service, w/5 African students
 (slide talk and tour)
 Aug. 26 Don Miller, Bill Cunningham, Ray Stewart, Don Brunell, U of M,
 (movies and stills for U of Vermont Education Television Station)
 Sept. 3 Samuel M. Carney, Migratory Bird Pop'l. Sta., Laurel, Md.
 (courtesy visit)
 Sept. 19 Noxon 4th & 5th grades, 20 w/teacher (talk and tour)
 Sept. 21 YMCA, Missoula, group of 12 (talk and tour)
 Sept. 21 Chuck Osborn & family, Columbia Ref. (courtesy visit)
 Oct. 1 Milas Henshaw & Dave Jackson, Bill Burrud Productions, Los An-
 geles (photograph roundup)
 Oct. 1 John Fowler, Kelly, Wyo., Film Lectures, Inc. (photo. roundup)
 Oct. 10- Erwin Bauer & wife and Frank Sayers & wife, Columbus, Ohio,
 13 outdoor writer
 Oct. 30 James J. Wilson & David Litton, OEO, Washington D.C. (courtesy)
 Nov. 4 Sgt. Al Ryerson, Kalispell, Montana Highway Patrol (talk and
 films for SAFETY meeting)

C. Refuge Participation

Mazzoni

1/20 - With Augsburg, attended Annual Montana Wilderness Association
 meeting in Kalispell.
 3/16 - Served as judge at District Science fair in Hamilton.
 3/21-
 3/24- Attended Northwest Section of the Wildlife Society meeting in
 Edmonton, Alberta, Canada.
 4/27 - With Kraft, attended Annual Polson Outdoors, Inc. banquet
 6/6 - With Nick Mariana, taped 30 minute KGVO TV program special on
 the Bison Range.
 6/20 - Slide talk presentation to SCS range workshop held on refuge.
 9/30 - Attended annual Soil Conservation District meeting in Kalispell.

Presented films or slide talks to four local groups. Numerous
 talks and tours for individuals and groups on refuge. Attended
 regular meetings of Charlo Lions Club, and served as Second Vice-
 President, Chairman of Publicity and Program Committees of that

organization. Attended occasional meetings of Western Montana Fish and Game Association and Federal Businessmen's Association in Missoula.

Augsburger

- 3/7 - Attended Western Montana Fish and Game Association meeting.
- 3/20 - Served as judge at St. Ignatius elementary school science fair.
- 4/4 - Film and talk to St. Ignatius school groups.
Numerous talks and tours to individuals and groups on refuge.

May

Presented several talks and tours for various groups on refuge.

Hogge

As above. Slide talk to Explorer Scouts in Charlo on August 20. Served as Scout Master of Troop 56, Charlo (14th year), Chairman of District Leadership Training Committee, BSA, Member Western Montana Council Leadership Training Committee, BSA, Member of National Jamboree Committee from Western Montana Council of BSA. Chairman of District 28 School Board. Chairman of PTA committee for Defensive Driving training courses to be sponsored by Charlo PTA.

Kraft

Numerous talks and tours for various individuals and groups on refuge.

Krantz

Presented three slide talks to local groups.

Middlemist

Presented several talks and tours for various groups on refuge. Chairman, District 9 School Board. 4-H Leader, and member of Executive Committee of 4-H Council of Sanders County.

D. Hunting

There is no public hunting on the refuge.

E. Fishing

Despite continued stream alteration work in the Jocko River by adjoining private land owners and the Bureau of Indian Affairs, this fine trout stream provided an estimated 2,090 hours of fishing for approximately 1,045 fishermen during the year. Locally, the best trout habitat is found in those sections of the stream located within the refuge boundary.

F. Violations

No known violations occurred in 1968.

G. SAFETY

Scheduled SAFETY meetings, and the main topics of discussion were as follows:

- Jan. 2 - Safety attitudes was the topic of discussion. A set of slides entitled "SAFETY attitudes" was shown.
- Feb. 5 - Two articles appearing in Readers Digest - "Is Your First Aid Up to Date" and "How to Deal With a Crisis" were reviewed and discussed.
- Mar. 5 - Two sets of slides, "Tips For New Employees" and "Keep It Clean for SAFETY'S Sake" were shown and followed by discussion of the hazards prevented as shown in the slides.
- Apr. 1 - Two films "The Invisible Killer" and "Vehicles Inspection" were shown. Discussion followed on vehicle maintenance, driver education, accidents and etc.
- May 3 - A film entitled "The Face Fly" was shown. The Child Labor Bulletin #101 published by the Dept. of Labor was reviewed and discussed.
- June 4 - The film "Volunteer Fireman" was shown and discussed. The Station SAFETY Program was reviewed and discussed.
- July 1 - The new, revised Station Fire Plan was read and discussed. Fire suppression methods were reviewed, followed by a field demonstration of the fire fighting equipment to acquaint the new employees with this equipment.
- Aug. 5 - The film "Farm Petroleum SAFETY" was shown and discussed. The auto accident that occurred on the tour road was discussed. Two-way radio operating procedures were reviewed.
- Sept. 3 - A film "Before They Happen" was shown and discussed.
- Oct. 2 - The subject of safe winter driving was discussed. Plans for the coming bison roundup were reviewed with SAFETY stressed at all times.
- Nov. 8 - Sgt. Al Ryerson, of the Kalispell District of the Montana Highway Patrol was guest speaker. His subject was highway SAFETY. Two films; "Automobile Tire Hydroplaning" and "The David Hall Story" were shown.
- Dec. 5 - General SAFETY practices were discussed; including winter driving, food poisoning, electric shock and home SAFETY.

Three accidents occurred during the year. Two involved visitors on the self-guiding tour route. One rolled his car over on the switchbacks east of Highpoint. The other tore his car door nearly off on one of our tour entrance posts. There were no injuries in either case. The one accident involving a refuge employee was a back injury. No lost time resulted.

Refuge personnel participated in the following SAFETY training courses:

- Feb. - March - All permanent male employees completed a standard first aid course. Mazzoni, Augsburg, May and Kenney completed the requirements for the advanced course.

- March 7 - Kenney and Augsburgers attended U.S. Forest Service SAFETY Council defensive driving training course.
- March 8 - Mazzoni and Lampshire attended above course.
- May 6,7, 8 - Augsburgers, Kenney, Kraft and Krantz attended U.S. Forest Service Blasters Training Course at the Ninemile Ranger Station. All received Blasters Certificates.
- August 13, 14 & 15 - May, Hogge, Kraft, Krantz, Middlemist and Lampshire attended appropriate sessions of a SAFETY Seminar sponsored by the Flathead Tribe at the Kickinghorse CCC.

VII. OTHER ITEMS

A. Items of Interest

1. Training

In addition to the SAFETY-oriented courses discussed above, refuge personnel participated in the following training sessions during the year:

- Feb. 26 - Hogge attended a five-day Instructors Training Course sponsored by the U.S. Forest Service at the Missoula Fire Depot.
- June 20 - Mazzoni, Augsburgers, May, Kenney and Blankenship participated in a Range Workshop held by the Soil Conservation Service on the refuge. There were about 30 men in attendance, including refuge personnel from the Ravalli, Benton Lake and Charles M. Russell refuges.
- Nov. 15 - Hogge started the Fundamentals of Leadership Correspondence course.

2. Awards

We were honored on September 20 by a Soil Conservation Society of America award "In recognition of natural plant community management in a wise and judicious manner." This is the second award of its kind to be made, and the first to a public agency.

Clerk-typist Gladys C. Young received a Commendable Service Award upon her retirement from Federal Service, effective November 2, culminating over 23 years of dedicated service to the Bison Range and the refuge program.

She and Cy were honored at a going-away party held the evening of November 2 at the South Shore Inn in Polson. About 40 friends and co-workers were in attendance. Gifts presented included a set of luggage to facilitate all the trips Cy has planned for their retirement, and a bound album of photographs composed as a memento of their collective 55 plus years as employees on this refuge.

The Youngs have left the Bison Range, but their contributions will always remain as a tribute to two people who exemplified the finest

qualities of public service. We shall miss them, but shall always remember them with pride and a special feeling of affection.

Thus ends an era.

3. Miscellaneous

The refuge family was blessed with two new members during the year. On May 4, Christina Marie was born to Refuge Manager and Nancy Mazzoni. On December 3, Dona Lynn was born to Maintenceman and Faye Krantz.

About 165 riders participated in the annual Saddle Club Ride held Sunday, May 26. The weather was cool, and conditions generally excellent for the occasion. The local club arranged for the usual catered lunch at Highpoint. Two people were kicked during the day's outing, which isn't bad under the circumstances.

With the loss of Mrs. Joyce Lott's popular news column, "Range Ramblings", in 1967, a void in public communication developed. A refuge news column was initiated on March 14, with release of the first issue of "Refuge Ramblings". The column was prepared about twice a month, although this varied with availability of newsworthy material.

The primary objective of the column was to keep people informed about the refuge program, and to provide entertaining or interesting reading oriented to wildlife and related subjects.

The column was distributed to six local and regional newspapers, three radio stations and one television station. It was carried verbatim in the two lower Flathead Valley papers, and used in part by the other editors. The column received a warm response from local residents, especially.

Assistant Manager Augsburgsberger resigned effective September 7 to enter graduate school in New Mexico. Our request for a replacement was subsequently rejected under the "three out of four" program.

The Ninepipe subheadquarters was officially closed as of October 22 in the interest of economy and general operational efficiency. Ninepipe Assistant Manager Frank L. Kenney was transferred to the Turnbull refuge in Washington. The Ninepipe and Pablo waterfowl projects will now be managed entirely through this office.

Robert L. Barber, Assistant Manager at the Benton Lake Refuge, was subsequently selected for the GS-9 Assistant Manager position established at the Range, but was not scheduled to move until early January, 1969.

We were saddened by news of the untimely death of Maintenceman Robert Middlemist's wife Roberta on November 27. Mrs. Middlemist was buried at St. Ignatius on December 2.

Refuge Manager Mazzoni accepted the Wilderness Coordinator position in the Portland Regional Office. He and his family left the Range on December 15.

Marvin R. Kaschke, previously Biologist at the Charles M. Russell NWR, assumed the project leader duties on December 18. Marv, Janet and the two little members of the Kaschke family have much to look forward to in their new assignment.

B. Credits

Mazzoni - those sections and items not listed below.

Augsburger - Basic data analysis for II, C-3 and 4.

May - summary of accomplishments and cost data for Section III and IV, B. summary of material for VI. A and G. NR-8.

Hogge - summary of accomplishments for Section III.

Kraft - summary of material for VI, A.

Oxford - summary of sales receipts, etc., for Section IV. A, B and C. Typed, proof read and edited entire report.

All personnel contributed to collection of field data essential to the preparation of this report.

C. Photographs

Credit for the various photographs is given in each caption.

3-1752
Form NR
(April 1946)

UPLAND GAME RDS

1613

Refuge National Bison Range Months of January to April, 1968

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Hunting For Re- stocking For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Gray Partridge (288.1)	12,000 A. mixed cover	50	Unknown		250	Some movement to and from adjacent grasslands.
Chukar Partridge (288.2)	6,000 A. mixed cover	200	"		30	Population widely dispersed during breeding season.
Richardson's Grouse (297)	2,000 A. conifer type	30			70	
Ruffed Grouse (300)	300 A. brushy stream bottom	60			5(+)	None observed this period.
Ring-necked Pheasant (309.1)	2,000 A. grasslands and bottoms	25	"		75	Some movement to and from adjacent brushlands

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | (1) SPECIES: | (2) DENSITY: | (3) YOUNG PRODUCED: | (4) SEX RATIO: | (5) REMOVALS: | (6) TOTAL: | (7) REMARKS: |
|--|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| | Use correct common name. | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. | Indicate total number in each category removed during the report period. | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

3-1752
Form NR
(April 1946)

UPLAND GAME RDS

1613

Refuge National Bison Range Months of May to August, 19 68

Form NR-2 - UPLAND GAME BIRDS

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Hunting For Re- stocking For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Gray Partridge (288.1)	12,000 acres mixed cover		13 750	Unknown	1,000	Average brood size - 9.0
Chukar Partridge (288.2)	6,000 acres mixed cover		? 35	"	50	One covey of young birds numbering about 30 seen frequently in lower Triaky.
Richardson's Grouse (297)	2,000 acres conifer type		8 40	"	100	Average brood size - 4.84
Ruffed Grouse (300)	300 acres brushy stream bottom		- -	"	5(?)	None observed this period
Ring-necked Pheasant (309.1)	2,000 acres grass- lands and bottoms		? 20	"	75	Some movement to and from adjacent brushlands

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | (1) SPECIES: | Use correct common name. |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

3-1752
Form N
(April 1946)

UPLAND GAME RDS

1613

Refuge National Bison Range

Months of September to December, 19 68

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks	
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd. Estimated Total	Percentage	Hunting For Re- stocking For Research	Estimated number using Refuge	Pertinent information not specificioally requested. List introductions here.
Gray partridge (288.1)	12,000 A. mixed cover	15		Unknown		800	Some movement to and from adjacent grasslands.
Chukar partridge (288.2)	6,000 A. mixed cover	60		Unknown		100	
Richardson Grouse (297)	2,000 A. conifer type	27		Unknown		75	
Ruffed Grouse (300)	300 A. brush stream bottoms	60		Unknown		5(?)	One bird seen
Ring-necked pheasant(309.1)	2,000 A. grassland & bottoms	40		Unknown		50	Some movement to and from adjacent farmlands

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG G.

Refuge National Bison Range

Calendar Year 1968

(1) Species Common Name	(2) Density Cover types, total Acreage of Habitat	(3) Young Produced Number	(4) Removals				(5) Losses				(6) Introductions Number Source	(7) Estimated Total Refuge Population		(8) Sex Ratio
			Donation to Flathead Tribe	For Re- stocking	Sold	For Research	Predation	Disease	Winter-Loss	Loss-Accidents		At period of Greatest use ✓	As of Dec. 31	
Bison	15,600 A. grassland	91	3	1	87							420	329	1:1.2
Elk	5,000 A. conifer & grassland	10			17							70	53	1:1.5
Mule Deer	10,000 A. conifer, brush & grassland	61			66							291 ✓	225	1:1.04
White-tailed Deer	4,000 A. conifer, brush & grassland	40			32							190 ✓	158	1:1.7
Bighorn Sheep	8,000 A. conifer & grassland	6		15				1	1	1		70	52	Unknown
Antelope	6,000 A. grassland	21										84	84	1:1.1
Mountain Goat	2,000 A. conifer	2										9	9	Unknown
Texas Longhorn Steers	40 A. pasture	—										4	4	—

Remarks: (1) 1 male calf donated to State of Wyoming for breeding stock.

(2) 87 animals listed as sold included 80 sold alive and 7 butchered. Those butchered included a bull collected w/a broken leg; one bull that broke it's neck in the corrals during roundup; and one yearling bull that broke it's leg in the squeeze chute at roundup. 3 additional butchered animals were donated to schools through the Flathead Tribe.

Reported by Joseph P. Mazzoni

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge National Bison Range

Year ending April 30, 1968

(1) Species	(2) Density		(3) Removals						(4) Disposition of Furs					(5) Total Popula- tion
Common Name	Cover Types & Total	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
	Acreage of Habitat							Permit Number	Trappers Share	Refuge share				
Coyote	15,000 A. all habitat	1,500			None									10
Bobcat	" "	1,500			"									10
Porcupine	4,000 A. mixed habitat	160			5									25
Badger	10,000 A. grasslands	400			None									25
Raccoon	100 A. stream bottom	10			"									10
Yellow-bellied Marmot	2,000 A. mixed habitat	20			"									100
Striped skunk	2,500 stream bottoms	50			"									50
Mink	100 A. stream bottom	20			"									5
Muskrat	50 A. wetlands	2			"									20
Weasel (long-tailed and short-tailed)	5,000 A. mixed habitat	200			"									25

* List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

REMARKS: Population estimates based on general observations.

Reported by John Augsburg, Assistant Ref. Mgr.

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
- (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

3-1757
Form NR-7
(Rev. June 1960)

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge National Bison Range Year 19 68

Collections and Receipts (Seeds, rootstocks, trees, shrubs)							Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Hawthorn	30 ea.	C	3/16	NBR*	2.75	None	Lower Pauline Drainage		$\frac{1}{4}$ acre	30 Hawthorn	3/16	Poor	Lack of moisture
Cottonwood	15 ea.	C	3/16	"	3.40	None	"		$\frac{1}{4}$ acre	15 Cotton.	3/16	Poor	"
Quaking Aspen	84 ea.	C	3/15	"	3.40	None	Hdqts. area		$\frac{1}{2}$ acre	84 Q.A.	3/15	Fair	"
Cottonwood	105 ea.	C	3/15	"	3.40	None	" "		1 acre	105 Cott.	3/15	Fair	"
Alta fescu	50 #	R	4/5	comm.	9.50	None	West side of						
Orchard gr.	40 #	R	4/5		12.40	None	exhibition						
Ladino clo.	15 #	R	4/5		16.35	None	pasture	8#/ac.	12 acres	grass mix	4/5	Good	
Alta fescu	3 #	R	4/18	comm.	.57	15 #	Mission Cr.	10#/ac.	1 acre	grass mix	4/18	Fair	Lack/moi.
West. Wh.	5 #	R	4/18		2.50	15#	abandoned						
Kent. Blu.	2 #	R	4/18		1.50	15 #	gravel pits						
West. Wh.	5 #	R	5/10	comm.	2.50	10 #	Bank Stab.	20#/ac.	$\frac{1}{2}$ acre	grass mix	5/10	good	
Blu. Bunch Wh	5 #	R	5/10		2.50	none	near Qtrs. 2						

- (1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:

Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____
* Native stock _____

Remarks:
Native shrub planted throughout headquarters area to replace those
lost to natural attrition during past several years.

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge NATIONAL BISON RANGE County LAKE State MONTANA

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
NONE									
<u>NOTE:</u> 10 Acre irrigated portion of west Bison exhibition pasture plowed in Fall 1967. was reseeded to Alta fescue (50%), Orchard grass (40%), and Ladino clover (15%).									
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations NONE Haying Operations NONE Grazing Operations 2
Refuge personnel

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
MIXED GRASS	20	40	NONE	1. Cattle				
				2. Other Horses	2			148
				1. Total Refuge Acreage Under Cultivation				40*
Hay - Wild				2. Acreage Cultivated as Service Operation				40

* Periodic cultivation for grass hay production and irrigated pasture.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

3-1570
NR-89
(4/54)

REFUGE GRAIN REPORT

Refuge National Bison Range

Months of January through December, 1968

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Oats	316	—	316			56	56	260		260	
Barley	660	—	660			253	253	407		407	
Mixed Grain (oats & barley)	37	—	37			37	37	—		—	

(8) Indicate shipping or collection points _____

(9) Grain is stored at Barn and Granary.

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

(Source of grain)
Where stored

Shipped

On hand

ATMOSPHERIC

(1)

OR GRAIN
RECEIVED
ON HAND

(2)

GRAIN
RECEIVED
ON HAND

(3)

GRAIN
RECEIVED
ON HAND

(4)

GRAIN
RECEIVED
ON HAND

GRAIN
RECEIVED
ON HAND

(5)

GRAIN
RECEIVED
ON HAND

(6)

GRAIN
RECEIVED
ON HAND

(7)

GRAIN
RECEIVED
ON HAND

(8)

GRAIN
RECEIVED
ON HAND

(9)

GRAIN
RECEIVED
ON HAND

(10)

REFUGE GRAIN REPORT

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

Refuge

National Bison Range

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

1968

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) 6/6-7/17	Canada Thistle (Cirsium Arvense)	Roadsides: Tour road all boundary roads, Slaughterhouse road	51	Tordon 212 Mix (2# A.E. Tordon to 2# A.E. 2,4-D Amine per gallon)	25.5 gallons of mix	2# A.E./acre	Water 1:100	Ground sprayer with hand wand
(2) 5/5	Spotted knapweed	Jocko public fish- ing access road and parking area	4	2,4-D Amine (4# A.E./gal.)	2 gallons	2# A.E./acre	Water 1:100	As above
(3) 6/26-7/10	Goatweed (Hypericum per- foratum)	Pauline Creek drain- age	42	2,4-D Amine (4# A.E./gal.)	21 gallons	2# A.E./acre	Water 1:100	As above & w/boom
(4) 7/5-9	Goatweed	Alexander Basin Range between slaught- erhouse & east bound- ary adjacent to con- tour fence.	1284	2,4-D Amine (4# A.E./gal.)	642 gallons	2# A.E./acre	Water 1:3	Aerial fixed wing

10. Summary of results (continue on reverse side, if necessary)

- (1) Initial kill excellent - results appear far superior to 2,4-D treatment above.
- (2) Initial kill excellent.
- (3) Initial kill excellent, although treatment somewhat spotty in some areas due to nature of terrain.
- (4) Initial kill appeared quite good. Efforts to avoid direct spraying of chokecherry and serviceberry patches resulted in some unavoidable "skips" of unsprayed goatweed.

NINEPIPE REFUGE

NINEPIPE NATIONAL WILDLIFE REFUGE

Narrative Report

January 1, 1968 to December 31, 1968

REFUGE PERSONNEL

Joseph P. Mazzoni, Refuge Manager, Moiese, Montana
Frank L. Kenney, Refuge Manager, Charlo, Montana

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SPORT FISHERIES AND WILDLIFE
FISH AND WILDLIFE SERVICE
Charlo, Montana

C O N T E N T S

	PAGE
I. General.....	1
A. Weather Conditions.....	1
B. Habitat Conditions.....	1
1. Water.....	1
1968 Pool Elevations Chart.....	2
2. Food and Cover.....	3
II. Wildlife.....	3
A. Migratory Birds.....	3
B. Upland Game Birds.....	4
C. Big Game Animals.....	4
D. Fur Animals, Predators, Rodents and Other Mammals.....	4
E. Hawks, Eagles, Owls, Ravens and Magpies.....	5
F. Other Birds.....	5
G. Fish.....	6
H. Reptiles.....	6
I. Disease.....	6
III. Refuge Development and Maintenance.....	6
A. Physical Development.....	6
B. Plantings.....	7
C. Collections and Receipts.....	7
D. Control of Vegetation.....	7
E. Planned Burning.....	7
F. Fires.....	7
IV. Resource Management.....	7
A. Grazing.....	7
B. Haying.....	8
C. Fur Harvest.....	8
V. Field Investigations or Applied Research.....	8
A. Progress Report.....	8
VI. Public Relations.....	9
A. Recreational Uses.....	9
B. Refuge Visitors.....	9
C. Refuge Participation.....	9
D. Hunting.....	10
E. Violations.....	10
F. SAFETY.....	10
VII. Other Items.....	10
A. Items of Interest.....	10
B. Photographs.....	10
C. Report Credits.....	11
D. Signature.....	12

NINEPIPE NATIONAL WILDLIFE REFUGE

Narrative Report

January 1, 1968 to December 31, 1968

I. GENERAL

A. Weather Conditions

The year began with the reservoir entirely closed by ice except for one small opening near Tern Island - a condition which had existed since late November of 1967 - and ended with unseasonably warm weather about February 15. This is about a month earlier than the normally expected break-up in March.

The warm trend continued well into April, creating a false spring which affected waterfowl movements and caused an early growth of some of the forbs. On April 29, the daytime temperature rose to an unprecedented 81 degrees.

The last killing frost came on May 11, beginning a 144 day frost-free period ending October 2. In 1967 there were 128 frost-free days; in 1966, 139; and 1965, 127.

Generally, 1968 weather conditions may be summarized as normal with a mild winter and a cool summer.

B. Habitat Conditions

1. Water

When full, Ninepipe reservoir stores 14,870 acre feet and provides 1,672 surface acres for waterfowl. The spring run-off, irrigation demands and fall rains have established a pattern over the years whereby the supply of water stored in the reservoir is high during the first half of the year, then falls off abruptly as irrigation demands dictate. The pattern was almost reversed this year, as illustrated in the chart on the following page.

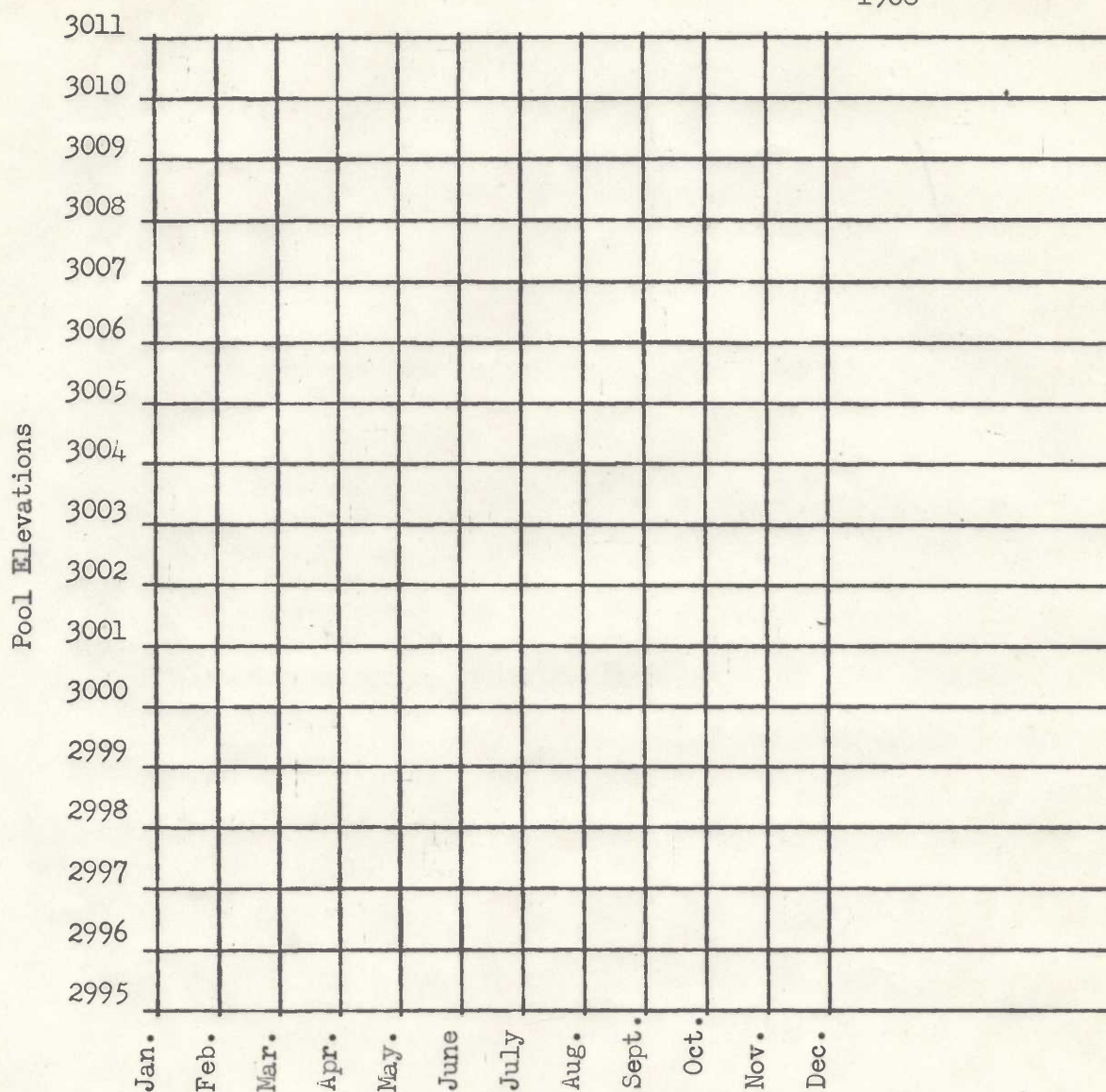
The two water conditions necessary for good waterfowl production on Ninepipe are a high water level and one that remains stable throughout the nesting season. This year, Ninepipe had neither.

The low water levels early in the season left more than half the goose nesting islands contiguous with the shore, resulting in considerable egg destruction by mammalian predators. Some of the pairs built precarious nests on the sand bars and rock outcroppings of the bottom. While most

1968 POOL ELEVATIONS
Ninepipe Reservoir

10-Year-Mean

1968



of the geese nesting at such low elevations had time to bring off broods, many of the later nesting ducks were flooded out by rapidly rising water.

The outlook for the 1969 nesting season is excellent, from a water level standpoint. However, high levels continuing into the fall, as they have this year, leave no exposed shores so important in providing browse for geese, particularly during the hunting season.

2. Food and Cover

Good grass cover was available on the upland for most nesting species, and food sources remained adequate throughout the open winter. The "false spring" mentioned earlier did provide considerable goose browse along the muddy shores.

It was necessary, however, to keep the cattle off the refuge until May 23 due to the late maturity of all vegetation. On most of the refuge, good, residual grass cover remains for winter cover and the 1969 nesting season.

The high water level remaining into the fall has, of course, produced a bumper aquatic plant crop. The pondweeds are thick enough to restrict the use of a boat over much of the reservoir surface. For the first time in many years, the duckweed blooms matured in the water and were available for waterfowl use.

II WILDLIFE

A. Migratory Birds

1. Whistling Swans were on the refuge continuously from March 3 until the last of June. A peak of 110 were seen on about March 20, but in a few days this number dwindled to 9 immature birds, one of which was crippled. These remained together until June 1. The lone cripple stayed well into the summer and was seen making strong flights on June 29.

2. Eighteen broods of Canada geese totaling 89 goslings were hatched this year, with about 70 surviving to flight stage. This production is far below that of recent years, due to the extremely poor nesting conditions. With water levels so low that half of the islands were contiguous with the shore, the geese were forced to double up. Tern Island, with a diameter of only 30 yards, produced at least three broods. The newly built island on the north shoreline was in use almost as soon as it was finished. Of the nine tree nesting baskets erected during the previous winter, two were used. One definitely produced a brood.

These broods, plus about 50 loafers, remained through the summer. Irrigation needs in August usually lower the water in the reservoir, providing muddy flats and subsequent favorable conditions for the production of natural goose browse. This is particularly important during the hunting season when as many as a thousand geese seek both food and safety within the exterior boundaries of the refuge. This year, however, the water remained high throughout hunting season.

3. No white-fronted or Ross geese were seen during the year, and the highest number of snows observed was 70 during the spring migration.

4. Rapidly rising water during May and June definitely affected duck production. However, the final number actually produced totalled over 800, with redheads, mallards and blue-winged teal (in that order) comprising 62% of the brood count.

An unusually large flight of pintails and widgeon arrived in the early fall, but mallards were definitely down. The peak fall migration was down from last year's 40,000 and the 100,000 counted in the fall of 1966.

5. Again, as in 1967, the coot hatch was low due to the flooding out of nests. However, a very large number moved into the refuge in the early fall, taking advantage of the heavy aquatic plant food production.

6. Most of the well known water and marsh bird species were present. A large number of western grebes remained until late in the fall.

7. An unusually large flock of Franklins gulls was lured to the area by the grain bait at the cannon net site.

B. Upland Game Birds

1. In spite of a good hatch last spring, plus a large number of birds planted by the Montana Fish and Game Department, the refuge pheasant population remains about the same - currently about 150 birds.

2. Only one or two coveys of gray partridge ever use the refuge. Reports on this same number go back more than 20 years.

C. Big Game Animals

1. One white-tailed deer doe and her yearling fawn were seen several times in the south portion of the refuge during the summer.

D. Fur Animals, Predators, Rodents and Other Mammals

1. Coyotes are definitely coming back to Ninepipe after an absence of many years. A pair lived most of the spring and summer on the south side of the refuge. In recent months, calls have been heard in the early morning hours near headquarters.

2. While dumped-out pets remain a problem, at least one source of stray dogs has been removed. A farmer living about five miles from the refuge was forced by the county sheriff to kill 43 of his pets. These dogs were mostly collie-German shephard crosses and had been seen on the refuge in packs of up to eight in number.

3. With the high water levels, muskrat trapping should be very good this winter. At least a dozen muskrat houses can be counted in the marsh. Probably many more muskrats moved in to take advantage of the food source and protection afforded by these conditions.

4. Judging from road kills and other observations, Ninepipe is currently supporting a good population of mink.
5. Striped skunks are at a low number, with one or two seen only occasionally along the dike. These have been observed digging up turtle eggs out of the clay, suggesting a possible benefit from these much maligned animals.
6. Badgers were not seen during the year, though at least one burrow is inhabited.
7. Weasels were infrequently found.
8. Meadow mice and deer mice seem to be in a decline, being nowhere nearly as evident as they were four years ago.
9. Pocket gophers have been found in several locations. In-sufficient data exists on whether they are increasing or decreasing. For many years they were not reported at all.

E. Hawks, Eagles, Owls, Ravens and Magpies

Unquestionably the raptors of this group are declining. The bird list for Ninepipe, revised in June of 1964, lists the golden eagle as a common fall visitor, uncommon in winter and spring, and occasional in the summer. It is now never seen in the spring and summer and only occasionally in the fall and winter. The sharp-shinned, Cooper's and swainson's are listed as uncommon in the fall, when over the past four years only the swainson's has been seen frequently enough for this category. Most of the others should be reduced to the occasional or rare classifications.

1. Bald Eagles remained on the refuge well into March, feeding on the large concentration of wintering mallards on the reservoir. The opening of the waterfowl hunting season usually brings in at least half a dozen. This year, only one could be found at that time.
2. Golden Eagles have not been seen on Ninepipe this year.
3. Owls. Great horned and short-eared are the most commonly seen. Winter usually brings in a large number of short-eared owls. Many of these are shot by hunters for sport even though they are protected by state law.
4. Some goose nest predation was evident from crows on two of the islands.
5. Magpies in moderate numbers nest on the refuge. Some predation on pheasant nests have been attributed to the magpie, but not enough to justify and control program.
6. Ravens are seen infrequently, usually in pairs.

F. Other birds.

Nothing unusual to report in this group.

G. Fish

With plenty of room and little competition, the bass remaining in Ninepipe are flourishing. Though fishing has been poor, those who are successful have been catching some very fine specimens. The largest, caught by Russ Durrant of Missoula, weighed over six pounds. Four-and-one-half pounders were common.

H. Reptiles

Nothing to report.

I. Disease

At least one goose fell prey to the sickness which claimed a number of geese the previous summer. It was found on the shallow pothole below the secondary dike at the south end of the refuge in a listless, unnatural condition. It was able to fly for short distances, however, and all attempts to catch it were unsuccessful. It is thought that this is an algae sickness, though positive proof is not available.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

The following improvements were accomplished in 1968:

Headquarters

Dead trees removed, new sign designating the office erected, and unsightly telephone pole and line removed.

Roads

An access road was built extending the patrol road east just inside the north refuge boundary fence for three-fourths of a mile. This greatly facilitates maintenance of the fences, but also allows a much better distribution of cattle since, during times of high water, at least one of the marshes becomes completely impassable.

Fences

One-and-one-eighth miles of the southwest boundary fence was rebuilt in cooperation with Montana Fish and Game Department personnel, who furnished needed materials and some labor.

One-and-one-half miles of the south boundary fence was also completely rebuilt, finishing the last of the poor fences around Ninepipe.

Wire stays were placed in more than four miles of boundary fence.

Recreational

The picnic area, fishermen's access parking lot, and stiles were maintained. Two new toilets were erected near the picnic area by the Kickinghorse Job Corp Conservation Center.

Biological

One new permanent earthen goose nesting island was completed at the 3002 level of the reservoir, making it useable even in years of low water such as the spring of 1968.

Nine nesting baskets were erected in cottonwoods along the shore. More are planned.

The Indian Irrigation Service constructed an island in the center of an earth excavation on the refuge, which will be useable in years of high water levels.

B. Plantings

None.

C. Collections and Receipts

None.

D. Control of Vegetation

Approximately seven acres were treated with 2-4,D amine herbicide, six for white top and one for Canada thistle. Due to heavy and persistent rains, this treatment was only partially successful. While the Canada thistle along the dike was killed, only the blooms of the white top were affected. At any rate, there is little purpose in treating the narrow uplands of Ninepipe when almost none is done by any of the neighbors.

E. Planned Burning

None.

F. Fires

None.

IV RESOURCE MANAGEMENT

A. Grazing

Grazing was deferred until May 23, as the weather delayed plant maturity. Only 33 head were turned in on this day. On June 3, 21 more were turned in. The 54 cattle were rotated through the pastures according to the following schedule:

<u>Pasture</u>	<u>Location</u>	<u>Allowed AUM's</u>	<u>AUM's Used</u>	<u>Date In</u>	<u>Date Out</u>
#1	West of main dike	30	31	May 23	June 14
#2	North shore, west $\frac{1}{2}$	70	43	June 14*	July 9
#3	North shore, east $\frac{1}{2}$	55	11	July 9	July 16
#4	East Hwy 93, Allntn.	20	18	July 16	July 27
#5	South part of refuge	205	108	July 27	Sept 26
TOTALS		380	211		

*So that an extra day is not charged against the use, the effective date is one day later than the turn in date. Thus, counting would begin on June 15, for #2.

Rapidly rising water crowded the cattle into a narrow strip along the north boundary fence in Pastures #2 and #3, greatly curtailing their use and causing some over-grazing in portions of this pasture. The newly built access road, however, averted considerable damage by permitting easy movement of the cattle and preventing them from becoming trapped on any of the spits of land as has happened in previous years.

B. Haying

None.

C. Fur Harvest

Indian trapper Ed Petticrew of Pablo did no trapping during the winter of 1967-1968, due to illness. Fur harvest figures for late 1968 will be reported in next year's narrative.

V FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Progress Report

1. Censuses

The wildlife inventory plan was put into complete use during the year with very pleasing results. Production estimates, now based heavily on pair counts, were surprisingly similar to those previously gained, through the use of brood counts only. Some very drastic changes were evident, however, indicating that both the redhead and cinnamon teal production have been grossly underestimated.

2. Banding

In June, 57 flightless geese were driven into a trap and banded

in cooperation with GMA Ash Brann and a State banding crew. Insufficient mallards were in the area to successfully trap any appreciable number. Only 9 were caught along with 112 pintails. The new cannon net assembly was used for the first time with excellent success.

3. Aquatic Plant Survey

Most of the collected specimens were mounted by the student assistant assigned to the Bison Range.

VI PUBLIC RELATIONS

A. Recreational Uses

Visitor use remained little changed from last year, with public fishing continuing as the most popular activity.

B. Refuge Visitors

4/26/68.....W. Ellis Klett, Range Conservationist, BIA....Courtesy Call
5/22/68.....Gordon Stewart & Bob Johnson, KGVO-TV, Missoula..Film Wildlife
6/19/68.....Gene Freeman, Kickinghorse Job Corp Center.....Business
7/12/68.....Donald S. Doughton, Div. of Realty, Portland.....Courtesy Call
7/12/68.....Edward Edelbrock, Div. of Realty, Portland.....Courtesy Call
7/22/68.....Marv Plenert, Lewistown, Montana.....Wetlands Inventory
9/5/68.....John R. Cloninger, USDA SCS, Polson, Montana.....Checking Soil
10/9/68.....Ed Smith, Regional Office.....Inspection

C. Refuge Participation

January	Presented a talk and program on water conservation to the Charlo Women's Club. 20 members.
February	Gave program to 60 members of Polson Outdoors Incorporated on the importance of Ninepipe and Pablo to the Pacific Flyway.
March	Attended Annual Conservation Day (ASCD) at Polson. Attended MF&G Association meeting in Missoula. Met with Garden Club members on proposed legislation protecting raptors in Montana. Met with Polson Outdoors Incorporated members on experimental floating goose nesting islands on Pablo.
April	Met with Polson Outdoors Incorporated on goose nesting plans. Gave talk to Garden Club members on hawks, owls and eagles.
May	Conducted several busloads of students from various high schools over the refuge.

Drove "ambulance" at annual saddle club ride on the
Bison Range.

June Gave talk to 35 members of the Confederated Women's Clubs
 at St. Ignatius on conservation.

 Attended two day range workshop on Bison Range..

July Conducted several parties of bird watchers over refuge.

August Conducted several parties of bird watchers over refuge.

September Presented talk on the migrations of birds to Thompson Falls
 Lions, 36 members, at Thompson Falls.

October Gave slide talk on conservation to 24 Garden Club members
 at Round Butte, west of Ronan.

D. Hunting

Over a hundred Canada geese were killed near Ninepipe when an
unusually large number of hunters took to the field on the first day of the
waterfowl hunting season. Mallards, green-wing teal and pintails were
duck species most frequently taken.

Pheasant hunting was considered generally fair.

E. Violations

Nothing to report.

F. SAFETY

No lost time accidents occurred on Ninepipe during 1968. SAFETY
meetings and fire drills were attended at the Bison Range.

VII OTHER ITEMS

A. Items of Interest

1. Training.

Attended Forest Service Blasting School at Nine Mile Ranger Station
for one week in May.

B. Photographs

Photo credits are given following each caption.

C. Report Credits

The basic report was prepared by Refuge Manager Kenney prior to his transfer to the Turnbull Refuge in October. It was completed and edited by Refuge Manager Mazzoni, and typed, proof-read and assembled by Clerk-Typist Sharon Oxford.

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE **Hispiro**

MONTHS OF January TO April, 19 68

[illegible]

3-17500

Cont. No. 1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)REFUGE NinepipeMONTHS OF January TO April, 19 68

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	3/10-16: 11	3/17-23: 12	3/24-30: 13	3/31-4/6: 14	4/7-13: 15	4/14-20: 16	4/21-27: 17	4/28-4/29: 18		
Swans:										
Whistling	100	110	80	87	8	3	2		2,765	
Trumpeter										
Geese:										
Canada	70	70	70	67	75	70	75		5,656	
Cackling										
Brant										
White-fronted										
Snow		2	2	2	4	4	9		161	
Blue										
Other										
TOTAL GESE	70	72	72	69	79	74	84		5,817	
Ducks:										
Mallard	5,000	3,000	3,000	1,000	1,000	1,000	1,000		623,000	
Black										
Gadwall	20	50	50	50	50	40	80		2,310	
Baldpate	150	500	500	1,000	300	300	100		21,910	
Pintail	3,000	3,000	3,000	2,000	700	200	150		120,680	
Green-winged teal	50	500	500	400	350	350	500		19,880	
Blue-winged teal										
Cinnamon teal										
Shoveler	20	20	20	70	600	600	600		14,770	
Wood										
Redhead	500	400	400	100	100	100	10		18,970	
Ring-necked		20	20	20	20	20	10		770	
Canvasback	70	70	70	120	80	100	200		5,460	
Scaup	10	110	110	60	150	150	150		5,250	
Goldeneye	1,020	150	150	100	20	70			18,970	
Bufflehead		20	20	20	10	10	30		770	
Ruddy		30	30	20	10	10	20		810	
Other										
H. Merganser				10	10				140	
C. Merganser		100	100	70	30	30	30		7,840	
TOTAL DUCKS	9,840	7,970	7,970	5,040	3,410	2,980	2,880		861,560	
Coat:	100	500	1,400	500 (over)	4,500	6,000	10,000		121,110	

	(5)	(6)	(7)	SUMMARY
	Total Days Use	Peak Number	Total Production	
Swans	2,765	110		Principal feeding areas <u>During winter, on adjacent farm lands. Early spring, green browse available on Refuge.</u>
Geese	5,817	85		
Ducks	861,560	14,230		Principal nesting areas _____
Coots	121,110	10,000		
				Reported by <u>Frank L. Kenney</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Mnongpi National Wildlife Refuge

MONTHS OF April 28 ^{THRU} August 31, 1968

(1) Species	(2) Weeks of reporting period									
	1 4/23-5/04	2 5/05-5/11	3 5/12-5/18	4 5/19-5/25	5 5/26-6/01	6 6/02-6/08	7 6/09-6/15	8 6/16-6/22	9 6/23-6/29	10 6/30-7/06
Swans:										
Whistling	2	2	9	9	9	1	1	1	1	
Trumpeter										
Geese:										
Canada	80	106	157	157	189	175	175	175	175	175
Cackling										
Brant										
White-fronted										
Snow	20		4	4						
Blue										
DOCK TOTAL GESE	100	106	161	161	189	175	175	175	175	175
Ducks:										
Mallard	1,000	500	500	500	150	150	150	150	150	150
Black										
Gadwall	80	50	70	70	100	100	100	100	100	100
Baldpate	100	50	70	70	20	20	20	20	20	20
Pintail	100	100	100	100	125	125	125	125	125	125
Green-winged teal	500	400	20	20	25	25	25	25	25	25
Blue-winged teal		10	50	50	60	60	60	60	60	60
Cinnamon teal	30	30	70	70	20	20	20	20	20	20
Shoveler	150	70	50	50	50	50	50	50	50	50
Wood		5	5	5	30	30	30	30	30	30
Redhead	100	100	200	200	650	650	650	650	650	650
Ring-necked	20	20	20	20	55	55	55	55	55	55
Canvasback	100	20	20	20						
Scaup	30	50	40	40						
Goldeneye	10									
Bufflehead	20									
Ruddy	20	20	20	20	60	60	60	60	60	60
Other										
H. Merg.			10	10						
C. Merg.			10	10						
TOTAL DUCKS	2,310	1,455	1,275	1,275	1,345	1,345	1,345	1,345	1,345	1,345
Coot:	2,000	1,000	1,000	1,000	550	550	550	550	550	550

3-17

Cont. N. 1
(Rev. March 1953)WATERFOWL
(Continuation Sheet)REFUGE Miner's National Wildlife RefugeMONTHS OF April 23 ^{THRU} August 31, 1968

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	7/07-7/13 11	7/14-7/20 12	7/21-7/27 13	7/28-8/3 14	8/4-8/10 15	8/11-8/17 16	8/18-8/24 17	8/25-8/31 18			
Swans:											
Whistling								1	232		
Trumpeter											
Geese:											
Canada	175	175	175	300	300	375	375	375	2,698	12	175
Cackling											
Brant											
White-fronted											
Snow									196		
Blue											
Other	175	175	175	300	300	375	375	375	2,698		
Ducks:											
Mallard	150	150	150	1,000	1,000	1,000	1,000	1,000	6,950	14	186
Black											
Gadwall	100	100	100	120	120	175	175	175	1,355	6	60
Baldpate	20	20	20	30	30	1,500	1,500	1,500	3,210	4	36
Pintail	125	125	125	150	150	475	475	475	2,265	8	66
Green-winged teal	25	25	25	30	30	80	80	80	1,025	5	16
Blue-winged teal	60	60	120	140	140	110	110	110	1,540	9	122
Cinnamon teal	20	20	20	30	30	100	100	100	510	2	60
Shoveler	50	50	50	100	100	50	50	50	730	3	20
Wood	30	30	30	40	40	20	20	20	297	3	12
Redhead	650	650	650	700	700	400	400	400	6,350	6	210
Ring-necked	55	55	55	70	70				500		
Canvasback	10	10	20	10	10	35	35	35	227	2	18
Scaup									1260		
Goldeneye									70		
Bufflehead									140		
Ruddy	60	60	60	70	70	115	115	115	775		
Other H. Merg.				10	10				200		
C. Merg.				20	20				1120		
TOTAL DUCKS	1,355	1,355	1,425	2,520	2,520	4,355	4,355	4,355	256,375	62	806
Coot:	600	600	600	600	650	1,000	1,000	1,000	163,450	10	200

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	232	9	0	Principal feeding areas <u>Adjacent fields</u>
Geese	26,894	375	75	
Ducks	256,375	4,355	806	Principal nesting areas <u>Sand bars and shoreline.</u>
Coots	163,450	4,000	200	<u>Low water made four islands unusable.</u>
				Reported by <u>Frank L. Kenney</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1750
Form NR--
(Rev. March 1953)

WATERFOWL

REFUGE MISSISSIPPI

MONTHS OF SEPT TO DEC, 19 68

(1) Species	(2) Weeks of reporting period									
	9/1-7 1	9/8-14 2	9/15-21 3	9/22-28 4	9/29-10/5 5	10/6-12 6	10/13-19 7	10/20-26 8	10/27-11/2 9	11/3-9 10
Swans:										
Whistling										
Trumpeter	1				1	1				
Geese:										
Canada	375	400	400	400	470	470	460	450	450	450
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	2,000	5,000	2,000	1,000	6,000	6,000	6,000	8,000	10,000	10,000
Black										
Gadwall	175	180	200	200	200	200	200	150	150	100
Baldpate	1,500	6,500	6,500	5,000	16,000	16,000	12,000	10,000	8,000	5,000
Pintail	470	470	6,000	20,000	400	400	200	200	100	100
Green-winged teal	80	80	1,000	2,000	2,000	2,000	1,000	500	100	50
Blue-winged teal	410	100								
Cinnamon teal	100	20								
Shoveler	50	50	100	100	250	250	150	100	100	100
Wood	20	20	20	20						
Redhead	400	400	400	400	600	600	600	800	800	800
Ring-necked				30	30	30	20	20	20	20
Canvasback	35	30	30	30	160	160	150	150	150	130
Scaup					20	20	20	50	50	50
Goldeneye					100	100	150	150	200	200
Bufflehead					50	50	50	50	50	50
Ruddy	115	120	120	120	120	120	120	100	100	100
Other Hooded Merg.					30	30	30	50	50	50
TOTAL DUCKS:	4,355	12,970	16,370	28,900	25,960	25,960	20,690	20,320	19,870	16,750
Coot:	4,000	17,000	20,000	20,000	20,000	20,000	15,000	10,000	5,000	5,000

3-1750a

Cont. No. 1
(Rev. March 1953)WATERFOWL
(Continuation Sheet)REFUGE NINEPIPE MONTHS OF SEPT TO DEC, 1988

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	11/10-16	11/17-23	11/24-30	12/1-7	12/8-14	12/15-21	12/22-28	12/29-1/5		
Swans:										
Whistling									63	
Trumpeter										
Geese:										
Canada	430	450	450	329	300	27	27		44,366	
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	12,000	15,000	33,000	15,000	15,000	12,000	5,000	500	1,157,500	
Black										
Gadwall	100	50	50	50	40				14,095	
Baldpate	3,000	3,000	2,800	2,000	800				686,700	
Pintail	100	50	30						199,640	
Green-winged teal	50	50	40						62,650	
Blue-winged teal									3,570	
Cinnamon teal									840	
Shoveler	50	30	5						9,345	
Wood									560	
Redhead	1,000	1,000	1,800	1,000	200				75,600	
Ring-necked	30	40	40						1,960	
Canvasback	150	120	120	20	20				10,185	
Scaup	200	1,500	2,000	1,000	800	200			41,370	
Goldeneye	300	500	700	300					18,900	
Bufflehead	50	50	50						3,150	
Ruddy	100	100	100	50					10,395	
Hooded Merg.	60	60	80	50	25				3,605	
TOTAL DUCKS:	17,190	21,550	40,815	19,470	16,845	12,200	5,000	500	2,280,005	
Coot:	1,000	1,000	600						970,200	

(over)

	(5)	(6)	(7)	
	Total Days Use	Peak Number	Total Production	SUMMARY
Swans	63	4		Principal feeding areas <u>Reservoir shorelines and nearby</u>
Geese	44,373	470		<u>grain fields</u>
Ducks	2,280,005	40,815		Principal nesting areas
Coots	970,200	20,000		
				Reported by <u>Frank L. Kenney</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove	5	4/15	5	4/30	Still Present
White-winged dove					
IV. Predaceous Birds:					
Golden eagle					
Duck hawk					
Horned owl	Previous	Period	2	2/15	Still Present
Magpie	"	"	15	4/15	"
Raven	"	"	6	4/15	"
Crow	10	2/20	10	4/15	"
Bald Eagle	Previous	Period	6	1/6	"
Goshawk	1	4/30	1	4/30	"
Red-tailed Hawk	1	3/15	1	3/15	1 3/15
Marsh Hawk	Previous	Period	4	4/15	Still Present
Pigeon Hawk	1	4/30	1	4/30	"
Sparrow Hawk	4	4/15	4	4/15	"
Short-eared Owl	Previous	Period	4	4/15	"
Reported by.....					Frank L. Kamey

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge Minnepipe National Wildlife Refuge Months of April 28 to August 31 1968

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous Period		2	7/1	Still present					2
Red-necked Grebe	"	"	130	7/1	"	"		25	60	130
Hared Grebe	"	"	50	7/1	"	"	No nests found			50
Western Grebe	"	"	270	8/15	"	"	1	40	120	270
Pied-billed Grebe	"	"	120	8/15	"	"	No nests found			120
Great Blue Heron	"	"	50	8/15	"	"				50
American Bittern	"	"	2	6/15	"	"				2
II. Shorebirds, Gulls and Terns:										
Sora	Previous Period		4	7/1	1	8/15		1	2	4
Killdeer	"	"	190	7/15	Still Present			30	90	190
Common Snipe	"	"	140	7/15	"	"		20	90	140
Greater Yellowlegs	"	"	40	8/30	"	"				40
Lesser Yellowlegs	"	"	20	8/30	"	"				20
American Avocet	"	"	80	7/15	"	"		10	30	80
Wilson's Phalarope	"	"	160	6/15	70	7/15		30	90	160
California Gull	"	"	180	8/15	Still Present		1	40	80	180
Ring-billed Gull	"	"	460	8/15	"	"	2	80	160	460
Franklin's Gull	"	"	5	8/15	"	"				5
Forster's Tern	"	"	250	8/15	"	"		100	200	250
Black Tern	"	"	80	8/15	"	"				80

(over)

(1)	(2)		(3)	(4)		(5)		(6)
III. <u>Doves and Pigeons:</u>								
Mourning dove	10	5/15	30	8/25	Still Present			30
White-winged dove								
IV. <u>Predaceous Birds:</u>								
Golden eagle								
Duck hawk								
Horned owl	Previous Period		2	6/15	Still Present			2
Magpie	"	"	40	8/15	"	"		40
Raven	"	"	2	8/15	"	"		2
Crow	"	"	25	6/15	"	"	4	25
Marsh hawk	"	"	4	6/15	"	"	1	4
Red-tailed Hawk	1	6/10	1	6/10	1	6/10		
Osprey	1	6/1	1	7/15	1	7/15		
Sparrow Hawk	4	6/1	4	6/1	4	6/1		
Reported by <u>Frank L. Kenney</u>								

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge NinepipeMonths of September to December 1956

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Common Loon	Previous	Period	2	9/30	2	10/10				
Red-necked Grebe	"	"	100	9/30		10/15				
Fared Grebe	"	"	50	10/15		10/15				
Western Grebe	"	"	200	10/15		11/1 *				
Great Blue Heron	"	"	20	10/15	Still	Present				
American Bittern	"	"	2	9/15	2	9/15				
							* Anticipated departure (from previous records)			
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer	Previous	Period	190	9/15	Still	Present				
Common Snipe	"	"	200	9/30	100	10/15				
Greater Yellowlegs	"	"	50	10/15	10	10/15				
American Avocet	"	"	50	9/15	50	10/5				
Wilson's Phalarope	"	"	50	9/15	50	10/1				
California Gull	"	"	30	9/15	Still	Present				
Ring-billed gull	"	"	200	9/15	"	"				
Franklin's Gull	40	9/5	40	9/5	40	10/15				
Forster's Tern	Previous	Period	250	9/15	250	10/1				
Black Tern	"	"	40	9/15	40	10/1				

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove	Previous Period	100	9/5	30	10/15
White-winged dove					
IV. Predaceous Birds:					
Golden eagle	1	10/10	—	—	Still Present
Duck hawk					
Horned owl	Previous Period	3	10/15	"	"
Magpie	"	40	10/15	"	"
Raven	"	4	10/1	"	"
Crow	"	10	10/1	"	"
Marsh hawk	"	4	10/15	"	"
Osprey	1	9/5	1	10/1	1
Short-eared owl	—	—	—	—	—
Bald Eagle	—	—	—	—	—
					(Peaks in December usually)
					(migrates late in fall. Usually about 10 seen in Nov. or Dec.)
					(should show up about Oct. 15.)
Reported by.....					

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Ninepipe For 12-month period ending August 31, 1968

Reported by Frank Kenney Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type Acreage	(3) Use-days	(4) Breeding Population	(5) Production	
	Crops	Ducks	3,678,535	320	806
	Upland	Geese	112,623	36	75
	Marsh	Swans	3,459	0	0
	Water	Coots	435,410	80	200
	Total	Total	4,230,027	436	1081
	Crops	Ducks			
	Upland	Geese			
	Marsh	Swans			
	Water	Coots			
	Total	Total			
	Crops	Ducks			
	Upland	Geese			
	Marsh	Swans			
	Water	Coots			
	Total	Total			
	Crops	Ducks			
	Upland	Geese			
	Marsh	Swans			
	Water	Coots			
	Total	Total			
	Crops	Ducks			
	Upland	Geese			
	Marsh	Swans			
	Water	Coots			
	Total	Total			
	Crops	Ducks			
	Upland	Geese			
	Marsh	Swans			
	Water	Coots			
	Total	Total			

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

(4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

(5) **Production:** Estimated total number of young raised to flight age.

3-1752
Form N
(April 1946)

UPLAND GAME RDS

1613

Refuge Ninepipe Months of January to April, 19 68

FORM NR-2 - UPLAND GAME BIRDS.

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Hunting For Re- stocking For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	246 A. Grasslands	2.46	1:3		100	Several hundred farm-raised pheasants have been released by the MF&G Dept. on or near the refuge. Due to dispersion, predation and road kill, their contribution to the refuge population is very small.
Gray Partridge	" "	25	1:1		10	Small covey is infrequently seen on south side of refuge.

* Only columns applicable to the period covered should be used.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

3-1752
Form A
(April 1946)

UPLAND GAME RDS

1613

Refuge Ninepipe Months of April 28 to August 31, 19 68

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Grasslands 246A	1.6	12	100	1:25	0	0	0	150	Undoubtedly birds planted by the MFG Dept. contribute to this population. Specific information is not available.
Gray Partridge	Grasslands 246A	25.0	Unknown		1:1				10	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form M-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Ninepipe Months of September to December, 1968

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Percentage	Hunting For Re- stocking For Research	Estimated number using Refuge Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Grasslands 246A	1.6	1:3		150	
Gray Partridge	Grasslands 246A	25.0	1:1		10	

* Only columns applicable to the period covered should be used.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Ninepipe

Year ending April 30, 1968

(1) Species	(2) Density		(3) Removals						(4) Disposition of Furs					(5) Total
Common Name	Cover Types & Total	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Popula- tion
	Acreage of Habitat							Permit Number	Trappers Share	Refuge share				
Striped Skunk	246 A. grassland	12	.....		None	.....	.....	.....	None	.....				20
Badger	" "	48			"				"					5
Pocket Gopher	" "	12			"				"					20
Columbia Ground Squirrel	" "	12			"				"					20
Coyote	" "	123			"				"					2
Muskrat	1672 A. water & marsh- land	33		30				BIA	30	None				50
Mink	" " "	167		4				"	4	"				10
Short-tailed Weasel	818 A. marsh & grass- land	16	.....		None	.....	.....	.....	None	.....				50
* List removals by Predator Animal Hunter														

* List removals by Predator Animal Hunter

REMARKS:

Reported by Frank L. Kenney

INSTRUCTIONS

Form NR-4 - **SMALL MAMMALS** (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) **SPECIES:** Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
 - (2) **DENSITY:** Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
 - (3) **REMOVALS:** Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
 - (4) **DISPOSITION OF FUR:** On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprime-ness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
 - (5) **TOTAL POPULATION:** Estimated total population of each species reported on as of April 30.
- REMARKS:** Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

REFUGE GRAIN REPORT

Refuge NinepipeMonths of January through December, 1968

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Wheat	40					20	20	20			
Barley	1,390					260	260	1,130			
								<u>1,150</u>			

(8) Indicate shipping or collection points

(9) Grain is stored at Ninepipe(10) Remarks Includes 200 bushels used by MF&G waterfowl trapping activities.

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Ninepipe County Lake State Montana

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
All permits are issued and all receipts are received by the Bureau of Indian Affairs, Ronan, Montana.									
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations _____ Haying Operations _____ Grazing Operations 2

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	54	380		750
				2. Other				
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild				2. Acreage Cultivated as Service Operation				

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge

Ninepipe

Proposal Number

Reporting Year

1968

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
5/28	White Top	Scattered patches over refuge	2	2-4D Amine	1 gallon	1:100	H ₂ O	Spray Truck
5/29	" "	"	4	" "	2 gallons	"	"	"
5/28	Canada Thistle	"	1	" "	1 gallon	"	"	"

10. Summary of results (continue on reverse side, if necessary)

This spraying was greatly hampered by rains. The only control was on the blooms of the white top. At least the seed production of this weed was retarded.

Summary of costs:

Materials.....	\$ 8.76
Labor.....	37.10
Equipment.....	12.50
TOTAL	\$58.36

PABLO REFUGE

PABLO NATIONAL WILDLIFE REFUGE

Narrative Report

January 1, 1968 to December 31, 1968

REFUGE PERSONNEL

Joseph P. Mazzone, Refuge Manager, Moiese, Montana
Frank L. Kenney, Refuge Manager, Charlo, Montana

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SPORT FISHERIES AND WILDLIFE
FISH AND WILDLIFE SERVICE
Charlo, Montana

PABLO NATIONAL WILDLIFE REFUGE

Narrative Report

January 1 to December 31, 1968

I. GENERAL

A. Weather Conditions

Though temperatures are considered to be about the same as Ninepipe, ice tends to form sooner on Pablo, and remains longer. This spring, for instance, the ice broke up in early March, fully two weeks later than Ninepipe. This occurred despite the unseasonably warm period that extended from March into the spring over the entire Flat-head Valley.

The summer was cool, rainy and killing frosts did not come until early October.

B. Habitat Conditions

1. Water

Full, Pablo reservoir measures 3,212 feet above sea level. During the fall of 1967, however, the reservoir had been emptied so that the year 1968 began with an elevation of only 3,190, just 5 feet above its lowest mark. It remained at this low level until April 1, when the Kerr Dam pumps were again activated by the Flat-head Irrigation Project.

Subsequent rains during the late spring and summer not only contributed to the reservoir, but reduced irrigation demands, resulting in a rapid rise in the water level. By June 20, the reservoir was within two feet of full. No major drawdown occurred during the fall, and the reservoir remained near maximum pool elevation through the end of the year.

2. Food and Cover

The extremely low water level and unseasonably warm weather which occurred in late winter resulted in an excellent growth of forbes or exposed mud flats. Later, ample browse and mature grain was available on adjacent farmland, some 350 acres of which is owned by the Montana Fish and Game Department.

Excellent wintering and nesting cover was left from 1967. Ample winter cover remains for the coming spring.

II. WILDLIFE

A. Migratory Birds

1. Whistling Swans. Only 13 were recorded on the refuge during the

spring migration. The largest fall concentrations occurred in Polson Bay of Flathead Lake, 4 or 5 airline miles north of Pablo.

2. Canada geese. Even with the low level of water during the spring, which left Pablo's only island high and dry, four broods of 24 goslings were produced on or near the refuge.

Early in the fall, some 800 geese moved onto the area. This number built up to over 1,000 before winter again closed the refuge.

3. Not more than 4 snow geese were seen on the refuge during the spring migration.

4. One Ross' goose was sighted in early May. No others were recorded through the year.

5. Annual duck use was down from the almost 1,000,000 duck-use-days recorded in 1967, and 2,500,000 recorded in 1966.

A comparison in duck production is shown below for the past few years:

1968	778
1967	389
1966	1,070
1965	600

Throughout these years, mallards and bluewinged teal made up more than half of all the duck production on the area.

6. Coot numbered as many as 3,000 during the fall, with moderate numbers on the refuge during the spring and summer.

7. Water and Marsh Birds. About 300 eared grebes arrived in April, many remaining through the summer. Common loons, red-necked and western grebes were present through the spring, summer and fall quarters. Great blud herons are always seen on the refuge.

B. Upland Game Birds

1. The shelter afforded ring-necked pheasants on Pablo is of increasing importance as more adjacent lands go from grain farming into livestock and potato production. Extremely important to these birds is the nesting cover on all sides of the reservoir.

2. Mourning doves are frequently seen in small numbers through the summer and early fall.

C. Big Game

One large mule deer doe was seen infrequently in the southwest corner.

D. Furbearers, Predators and Other Mammals

1. Coyotes. At least one pair are on the refuge at all times.
2. Beaver. One pair are working on the refuge, apparently denning in a bank. The beaver house near the dike is unoccupied.
3. Muskrats. Moderate numbers are present on the area, though the good water conditions may attract more during the coming months.

E. Hawks, Eagles, Owls, Magpies, Crows and Ravens

1. Hawks. The rough-legged hawk is the most common migrant, usually arriving in the late fall and staying until early spring. A pair of marsh hawks are present throughout the year. This is also one of the few places where the peregrine falcon can still be found.
2. Eagles. The bald eagles left early in January, and came back in the fall on about November 20 when one eagle was seen.

F. Other Birds

This is perhaps where the "peahen" should be mentioned. Frank Webster, who grazes cattle on Pablo, reported seeing a strange bird, describing it as a "two-horned, blue-necked ostrich about the size of a turkey". She lives in the Russian olive thicket on the north side of the refuge. The manager, from time to time, scatters grain for her use. It is doubtful she'll survive the winter, but she has so far eluded capture, even on film.

Nothing unusual to report on any of the other birds.

G. Fish

Again the Montana Fish and Game Department planted 8,000 rainbows. Fishing was good in early August, but only a small number of fishermen took advantage of it. Most fish caught were over 17 inches long.

H. Reptiles

Nothing to report.

I. Disease

Nothing to report.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Fences. Rebuilt two enclosures on the north side of the refuge to

protect early shrub cover plantings and also to serve as an index on the grazing use of the area.

2. Signs. Placed new "NO DUMPING PLEASE" signs at all entrances. (One of these has already been pulled up and carried away.) The log frame supporting the fishermen's warning sign was painted.

B. Maintenance

Made routine repairs on fences, some of which were torn down by vandals. Repaired cattle guard and replaced several signs.

C. Plantings

Nothing to report.

D. Collections and Receipts

Nothing to report.

E. Control of Vegetation

Nothing to report.

F. Fires

None.

IV. RESOURCE MANAGEMENT

A. Grazing

About 90 head of cattle were turned in on May 15. Units 2 and 3 were grazed until July 15, when they were turned into Unit 4 and 5. All stock was removed on September 15. For the first time the cattle had easy access to Unit 5 on the west side due to the construction of a new fence along the northeast side of the BIA administered grain field. The original fence crosses a deep inlet, and previously prevented cattle access to the entire west side of the refuge when water levels were high. This change was made possible through the cooperation of the Tribal Council. The old fence has been retained so that the cattle can be contained in Unit 3 as desired.

B. Haying

None.

C. Fur Harvest

None was done during the winter of 1967-1968. Trapper Ed Petticrew began trapping as this was being written, and his late 1968 fur harvest will be reported in next years narrative.

D. Commercial Fishing

None.

V. FIELD INVESTIGATIONS AND APPLIED RESEARCH

A. Census

The new wildlife inventory plan was used throughout the year. This included waterfowl population summaries, pair counts and brood counts.

B. Banding

Thirty-seven Canada geese, including 10 goslings, were driven into a trap, sexed, aged and banded during their flightless stage, in cooperation with GMA Ash Brann and a state banding crew. Other goose banding operations were carried on in the early fall by the Montana Fish and Game Department.

VI. PUBLIC RELATIONS

A. Recreational Uses

1. Fishing

All public use of Pablo was very light this year. Of the estimated 300 actual visits, 180 were fishermen. With a guaranteed minimum reservoir level which would allow survival of the rainbows stocked from year to year, a somewhat higher recreational value would be possible.

2. Hunting

While no hunting was permitted within the boundaries, the refuge did contribute to excellent goose and duck hunting on lands immediately adjacent. An estimated 50 Canada geese were killed the first day of the season.

B. Refuge Visitors

See Ninepipe report.

C. Refuge Participation

See Ninepipe report.

D. Violations

None observed.

VII. REPORT CREDITS

The basic report was prepared by Refuge Manager Kenney prior to his transfer to the Turnbull refuge in October. It was completed and edited by Refuge Manager Mazzoni, and typed, proof-read and assembled by Clerk-typist Sharon Oxford.

SIGNATURE PAGE

Submitted by:

Joseph P. Maguire
(Signature)

Refuge Manager
(Title)

Date: 2/28/69

Approved, Regional Office:

Date: 2/28/69

Charles J. Lankford
(Signature)

Asst. Regional Refugee Supervisor
(Title)

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Pablo

MONTHS OF January TO April, 1968

(1)	(2) Weeks of reporting period									
Species	12/31-1/6	1/7-13	1/14-20	1/21-27	1/28-2/3	2/4-2/10	2/11-2/17	2/18-2/24	2/25-3/2	3/3-9
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada								77		77
Cackling										
Brant										
White-fronted										
Snow										
Blue										
TOTAL GESE								77		77
Ducks:										
Mallard								400		400
Black										
Gadwall										
Baldpate								100		100
Pintail								500		500
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye								20		20
Bufflehead										
Ruddy										
Other										
TOTAL DUCES								1,020		1,020

3-17

Cont. No. 1

(Rev. March 1953)

WATERFOWL (Continuation Sheet)

REFUGE PabloMONTHS OF January TO April, 1968

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	3/10-16: 11	3/17-23: 12	3/24-30: 13	3/31-4/6: 14	4/7-13: 15	4/14-20: 16	4/21-27: 17	4/28-5/4: 18		
Swans:					15	1			112	
Whistling										
Trumpeter										
Geese:										
Canada	34	46	10	13	51	22	24		2,478	
Cackling										
Brant										
White-fronted										
Snow					4		3		49	
Blue										
XXXX TOTAL GEES	34	46	10	13	55	22	27		3,227	
Ducks:										
Mallard	400	400	400	1,000	1,050	1,000	500		38,850	
Black										
Gadwall							20		140	
Baldpate	500	50	50	1,500	700	1,500	200		32,900	
Pintail	1,200	500	500	300	850	400	800		38,850	
Green-winged teal	100			100	50	80	80		2,870	
Blue-winged teal										
Cinnamon teal							20		140	
Shoveler					30	50	50		910	
Wood										
Redhead						10	10		140	
Ring-necked										
Canvasback						10	10		140	
Scaup		20	20	30	50	50	20		1,350	
Goldeneye	20	50	50	10					1,190	
Bufflehead						10	10		140	
Ruddy		10	10						140	
XXXX H. Merganser										
C. Merganser			50		20	20	20		770	
XXXX TOTAL DUCKS	2,220	1,030	1,080	2,940	2,750	3,130	1,740		118,510	
not:	20	20	20	(over) 20	20	100	200		3,080	

	(5)	(6)	(7)	SUMMARY
	Total Days Use	Peak Number	Total Production	
Swans	112	15		Principal feeding areas <u>Grain lands adjacent to refuge.</u>
Geese	3,227	77		
Ducks	118,510	3,130		Principal nesting areas
Coots	3,080	200		
				Reported by <u>Frank L. Kenney</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Pablo National Wildlife Refuge

MONTHS OF April 23 TO August 31, 1968

[illegible]

Cont. 1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE **Pablo National Wildlife Refuge**

MONTHS OF **April 28** TO **August 31**, 19**68**

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	7/7-7/13: 11	7/14- 12/20	7/21-7/27: 13	7/28-8/3: 14	8/4-8/10: 15	8/11-8/17: 16	8/18-8/24: 17	8/25-8/31: 18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	80	80	80	80	80	815	815	815	24,395	4	26
Cackling											
Brant											
White-fronted											
Snow									21		
ROSS Ross									7		
Other TOTAL GESE	80	80	80	80	80	815	815	815	24,423	4	26
Ducks:											
Mallard	500	500	500	500	500	555	555	555	56,805	14	396
Black											
Gadwall	50	50	50	50	50	50	50	50	4,300	4	30
Baldpate	50	50	50	50	50	650	650	650	22,850	4	60
Pintail	50	50	50	50	50	380	380	380	14,250	4	56
Green-winged teal	50	50	50	50	50	10	10	10	3,430	3	30
Blue-winged teal	110	110	110	110	110	120	120	120	9,380	11	114
Cinnamon teal	30	30	30	30	30	30	30	30	3,080	2	20
Shoveler	60	60	60	60	60	240	240	240	11,530	5	27
Wood	20	20	20	20	20	20	20	20	1,830	2	10
Redhead	50	50	50	50	50	45	45	45	4,725	2	30
Ring-necked						95	95	95	1,995		
Canvasback	10	10	10	10	10	5	5	5	1,155	1	5
Scaup									840		
Goldeneye									630		
Bufflehead									210		
Ruddy						40	40	40	840		
Other H. Herg.											
C. Herg.	20	20	20	20	20	20	20	20	1,950		
TOTAL DUCKS	1,000	1,000	1,000	1,000	1,000	2,240	2,240	2,240	136,530	52	778
Coot:	200	200	200	200	200	285	285	285	26,985	5	60

(over)

	(5)	(6)	(7)	SUMMARY
	Total Days Use	Peak Number	Total Production	
Swans				Principal feeding areas <u>Private and state operated farm-</u>
Geese	<u>24,423</u>	<u>815</u>	<u>26</u>	<u>land adjacent to refuge.</u>
Ducks	<u>138,530</u>	<u>2,240</u>	<u>775</u>	Principal nesting areas <u>Southwest portion of reservoir.</u>
Coots	<u>26,985</u>	<u>295</u>	<u>60</u>	
				Reported by <u>Frank L. Kenney</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE PALO

MONTHS OF SEPT TO DEC, 19 68

(1) Species	(2) Weeks of reporting period									
	9/1-7 1	9/8-14 2	9/15-21 3	9/22-28 4	9/29-10/5 5	10/6-12 6	10/13-19 7	10/20-26 8	10/27-11/2 9	11/3-9 10
Swans:										
Whistling Trumpeter										
Geese:										
Canada	815	800	800	800	600	600	400	350	220	220
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	555	2,000	1830	2,000	4,000	4,000	4,000	5,000	6,000	6,000
Black										
Gadwall	50	50	50	50	100	100	100	50	50	50
Baldpate	630	630	2250	1,000	2,000	2,000	2,000	2,000	2,000	1,500
Pintail	380	2,750	370	600	200	200	200	200	300	500
Green-winged teal	10	20	500	1,000	2,000	2,000	1,000	500	100	50
Blue-winged teal	120	120								
Cinnamon teal	30	30								
Shoveler	240	240	10	10	400	400	300	200	100	50
Wood	20	20	5	5						
Redhead	45	1,200	1200	1,200	5,000	5,000	5,000	3,000	3,000	3,000
Ring-necked	95	100	100	100	200	200	200	250	300	300
Canvasback	5	10			200	200	200	200	200	200
Scaup					50	50	200	500	1,000	2,000
Goldeneye					200	200	200	300	300	200
Bufflehead					200	200	200	250	250	200
Ruddy	40	40	50	100	100	100	100	200	200	200
Other										
Hooded Merg.					20	20	20	20	20	20
Common Merg.	20	20	20	20	20	20	20	10	10	20
9999 TOTAL DUCKS:	2,240	7,230	6385	6,035	14,690	14,690	13,740	12,680	13,830	14,290
COOT:	285	6,000	1000	1,000	3,000	3,000	2,000	2,000	1,000	1,000

3-1
Cont. No. 1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE PABLO MONTHS OF SEPT TO DEC, 1968

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	11/10-16	11/17-23	11/24-30	12/1-7	12/8-14	12/15-21	12/22-28	12/29-1/5		
Swans:										
Whistling				19					139	
Trumpeter										
Geese:										
Canada	260	220	210	471	200	25			48,937	
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	6,000	8,000	15,000	6,000	2,000	500			510,195	
Black										
Gadwall	50	50	50						5,600	
Baldpate	1,500	1,500	1,500	200					144,970	
Pintail	500	1,000	1,000	200					58,800	
Green-winged teal	30	20	50						50,960	
Blue-winged teal									1,680	
Cinnamon teal									420	
Shoveler	50	30	10						14,280	
Wood									350	
Redhead	2,000	2,000	2,000						235,515	
Ring-necked	200	300	300						18,515	
Canvasback	300	300	400	100					16,205	
Scaup	3,000	4,000	4,000	2,000	500	50			121,450	
Goldeneye	300	300	300	100					16,800	
Bufflehead	300	300	350	100					16,450	
Ruddy	300	300	400	50					14,910	
97977 Hooded Merg.	10	10	10	10	10	10			1,260	
Common Merg.	50	100	200	100	50	25			4,935	
TOTAL DUCKS:	14,590	18,210	25,570	8,860	2,560	585			1,233,295	
Coot:	500	200	100						147,595	
				(over)						

	(5)	(6)	(7)		SUMMARY
	Total Days Use	Peak Number	Total Production		
Swans	133	19		Principal feeding areas	Adjacent fields
Geese	148,937	815			
Ducks	1,233,295	25,570		Principal nesting areas	
Coots	147,595	6,000			
				Reported by	Frank I. Kenney

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge **Pablo**Months of **January** to **April** 19**68**

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Common Loon	2	4/15	4	4/30	Still Present					
Red-necked Grebe	10	4/10	40	4/30	"	"	"	"	"	"
Western Grebe	20	4/1	50	4/30	"	"	"	"	"	"
Eared Grebe	10	4/10	300	4/30	"	"	"	"	"	"

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove					
White-winged dove					
IV. Predaceous Birds:					
Golden eagle					
Duck hawk	Previous	Period	2	2/15	Still Present
Horned owl	"	"	2	4/15	" "
Magpie	"	"	25	4/15	" "
Raven	"	"	4	1/15	" "
Crow	"	"	5	4/15	" "
Bald Eagle	"	"	4	1/15	4 2/10
Red-tailed Hawk	"	"	1	4/10	Still Present
Rough-legged Hawk	"	"	2	3/15	2 3/15
Marsh Hawk	"	"	4	4/15	Still Present
Short-eared Owl	"	"	4	4/30	" "
				Reported by	Frank L. Kenney

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge **Pablo NR**

Months of

to **August 31**

195

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous Period		18	6/15	Still Present					18
Red-necked Grebe	"	"	50	7/1	"	"		10	30	50
Western Grebe	"	"	80	7/1	"	"		15	40	80
Hared Grebe	"	"	300	6/1	"	"				300
Double crest cormorant	1	7/1	1	7/1	1	7/1				1
Great Blue Heron	Previous Period		10	7/1	Still Present					10

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	10	6/15	10	8/15	10
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle					
Duck hawk	Previous Period	2	6/1	2	6/1
Horned owl	"	2	8/15	Still Present	
Magpie	"	75	7/1	"	5
Raven	"	2	8/15	"	20
Crow	"	15	7/1	"	2
Red-tailed Hawk	"	1	7/1	"	8
Marsh Hawk	"	4	7/15	"	15
Short-eared Owl	"	3	8/15	"	1
					4
					3
Reported by <u>Frank L. Kenney</u>					

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge PALCOMonths of SEPT

to

DEC1968

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Common Loon	Previous Period		20	09/10	20	10/01				
Red-necked Grebe	"	"	100	09/10	30	09/30				
Horned Grebe	"	"	20	09/10	10	09/30				
Rared Grebe	"	"	40	10/15	40	10/15				
Western Grebe	"	"	220	10/15	40	10/30				
Double-crested Cormorant	"	"	4	09/10	4	10/01				
Great Blue Heron	"	"	20	10/15	Still Present					
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer	"	"	120	09/10	10	10/15				
Common Snipe	"	"	60	09/10	10	11/01				
Greater Yellowlegs	"	"	2	09/10	2	09/30				
Lesser Yellowlegs	"	"	20	09/10	20	09/30				
American Avocet	"	"	30	09/10	10	09/30				

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove					
White-winged dove					
IV. Predaceous Birds:					
Golden eagle					
Duck hawk					
Horned owl					
Magpie					
Raven					
Crow					

Reported by.....

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Pablo NWR For 12-month period ending August 31, 1968

Reported by Frank Kenney Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type Acreage	(3) Use-days	(4) Breeding Population	(5) Production
	Crops	Ducks	400	778
	Upland	Geese	10	26
	Marsh	Swans		
	Water	Coots	30	60
	Total	Total	440	864
	Crops	Ducks		
	Upland	Geese		
	Marsh	Swans		
	Water	Coots		
	Total	Total		
	Crops	Ducks		
	Upland	Geese		
	Marsh	Swans		
	Water	Coots		
	Total	Total		
	Crops	Ducks		
	Upland	Geese		
	Marsh	Swans		
	Water	Coots		
	Total	Total		
	Crops	Ducks		
	Upland	Geese		
	Marsh	Swans		
	Water	Coots		
	Total	Total		
	Crops	Ducks		
	Upland	Geese		
	Marsh	Swans		
	Water	Coots		
	Total	Total		
	Crops	Ducks		
	Upland	Geese		
	Marsh	Swans		
	Water	Coots		
	Total	Total		

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

- (1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.
- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.
- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.
- (4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.
- (5) **Production:** Estimated total number of young raised to flight age.

3-1752
Form
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Pablo Months of January to April, 19 68

Form NR-2 - UPLAND GAME BIRDS

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Hunting For Re- stocking For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Crop land 175 Hay land 15 Grassland 480 670	3.4	1:3		200	Due to an open winter, survival was high. Ample cover is available.

* Only columns applicable to the period covered should be used

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

3-1750
Form ...
(April 1946)

UPLAND GAME RDS

1613

Refuge Pablo NWR

Months of April 28 to August 31, 1968

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Cropland 175 Hayland 15 Grassland 480	1.9	5	80	1:25	0	0	0	350	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form
(April 1946)

UPLAND GAME RDS

1613

Refuge PABLO Months of SEPT to DEC, 1968

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specificoally requested. List introductions here.
Ring-necked pheasant	Croplands 175 Haylands 15 Grasslands 480 <u>670</u>	4.4			1:3				150	Numbers are augmented by plantings of the Mont F&G on and near the refuge. The Mont. F&G Dept. does not keep a record of these plantings according to the local biologist.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- | | |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) SPECIES: | Use correct common name. |
| (2) DENSITY: | Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |
| (3) YOUNG PRODUCED: | Estimated number of young produced, based upon observations and actual counts in representative breeding habitat. |
| (4) SEX RATIO: | This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available. |
| (5) REMOVALS: | Indicate total number in each category removed during the report period. |
| (6) TOTAL: | Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons. |
| (7) REMARKS: | Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested. |

* Only columns applicable to the period covered should be used.

3-175
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Pablo

Year ending April 30, 1968

(1) Species	(2) Density	(3) Removals					(4) Disposition of Furs					(5) Total		
Common Name	Cover Types & Total	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Popula- tion
	Acreage of Habitat							Permit Number	Trappers Share	Refuge share				
Striped Skunk	670 A. grassland, crop and hayland	33	.....	None	.....	.....	.....	.....	.....	None	.....	.....	20
Badger	" "	66	"	"	"	"	"	"	"	"	"	"	10	
Pocket Gopher	" "	33	"	"	"	"	"	"	"	"	"	"	20	
Columbia Ground Squirrel	" "	22	"	"	"	"	"	"	"	"	"	"	30	
Coyote	2 "	223	"	"	"	"	"	"	"	"	"	"	3	
Muskrat	1807 A. water & marsh	72		10				BIA	10	None			25	
Mink	" "	180		4				BIA	4	"			10	
Weasel	670 A. grassland & crop	67	.....	None	.....	.....	.....	.....	.....	None	.....	.....	10
Beaver	1807 A. water & marsh	300		14				BIA	14	None			6	

* List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

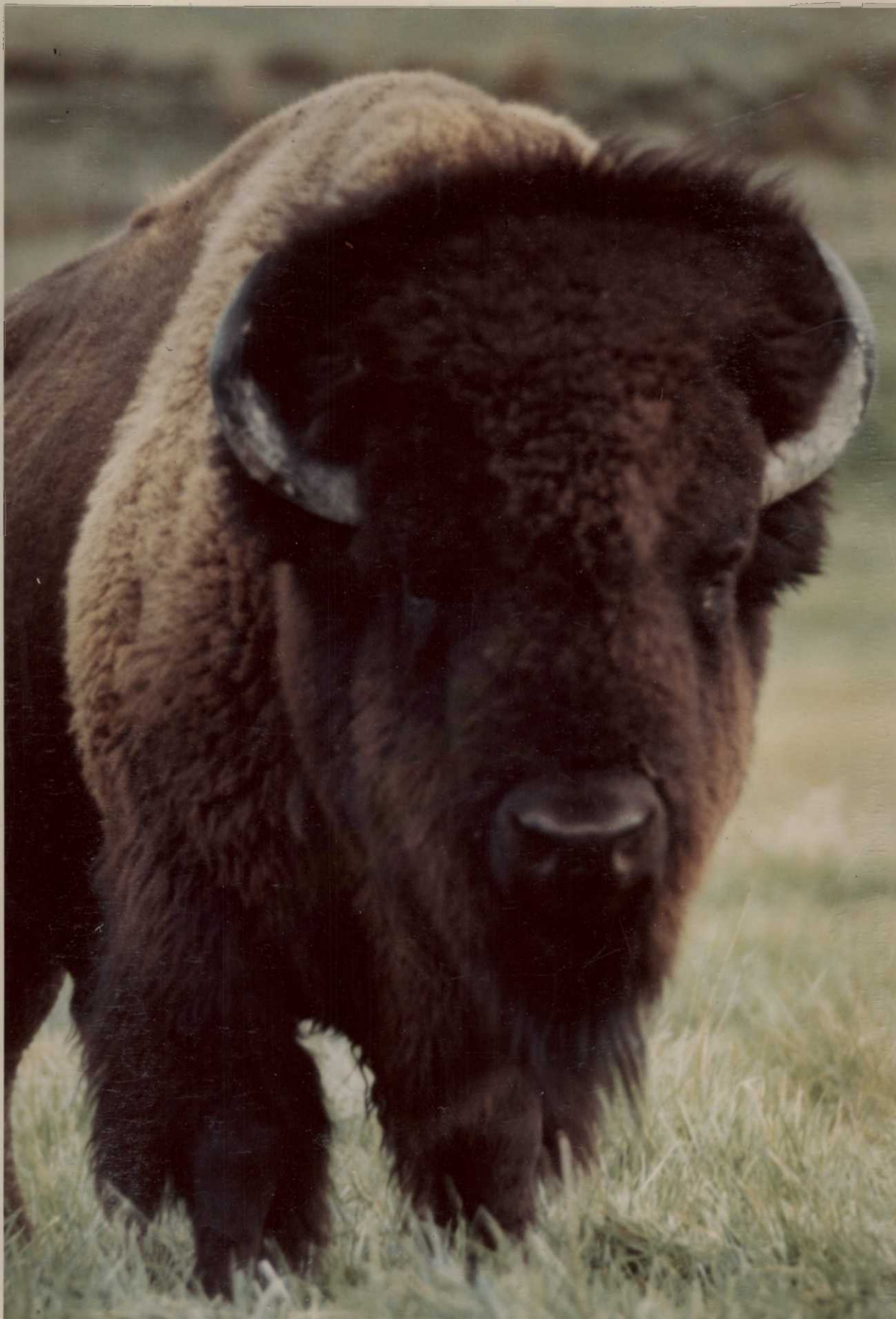
REMARKS: The unusually high number of beaver trapped, were taken below the dam in the ponds near the gravel pit and may have included travelers.

Reported by Frank L. Kenney

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
 - (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
 - (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
 - (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprime-ness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
 - (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.



The herd monarch. An exceptionally fine eight year old bull. Mazzoni



NBR-67-133; 9/67 - Clay bank adjacent to headquarters entrance road, subject to chronic winter slippage. Mazzoni



NBR-68-38; 4/68 - Kickinghorse Job Corpsmen and backhoe unit on finish sloping. Mazzoni



NBR-68-133; 11/68 - The end result - a well established stand of grass on a bank which should be permanently stabilized. Note the difference in plant density between jute netting below and paper "Erosion-net" above. Mazzoni



NBR-68-1; 2/68 - Post-season mallard cannon-net banding along Mission Creek at headquarters. NYC Wallace and Kraft. Mazzoni



NBR-68-17; 3/5 - Seventeen bighorns in sheep trap in Trisky Creek. Fifteen were subsequently released near Columbia Falls, Montana, and two were released back to range. Mazzoni



NBR-68-18; 3/6 - Processing sheep at corrals. Graduate student Steve Berwick is aging ewe while crew holds animal. Securing enough help was not a problem! Mazzoni



NBR-68-42; 4/68 - Upper Elk Lane fence prior to renovation. Mazzoni



NBR-68-140; 11/68 - Same section following renovation. Most existing wire was salvageable. Mazzoni



NBR-68-37; 4/68 - Typical buffalo damage experienced with nearly all metal gates of this height. Damaged gates were rebuilt and extended 18 inches. Mazzoni.



NBR-68-54; 5/68 - Old bomb service truck and new, permanent fire truck rebuilt by Heavy Duty Mechanic Hogge, standing at right. The truck was acquired through Tule Lake refuge. Mazzoni



NBR-68-47; 5/68 - Our only fire started in cottonwood slash on private land and was spread to refuge lands in background by 60 to 70 mph winds. The fire consumed about 50 acres of refuge land, and was stopped short of important elk range. Mazzoni



NBR-68-53; 5/68 - Major damage involved loss of boundary fence posts and stream bottom habitat. Mazzoni



NBR-68-60; 5/68 - Ewe estimated at 5 or 6 years of age collected in Trisky. Note open infection at base of horn and deformity of horn itself. Eye ball pushed out and eye lids drawn back from inner pressure. Mazzoni



NBR-68-90; 6/68 - Above ewe, illustrating tumor-like growth in brain cavity. Bacteria identified as Actinomyces sp found in growth. Mazzoni



NBR-68-73; 6/68 - Tour entrance fee installation, showing ticket and leaflet dispensing post and tour fee sign on left, and stop sign on right. Mazzoni



NBR-68-76; 6/68 - New wording explaining the fee system was adopted, and there was little of the confusion experienced last year. Mazzoni



NBR-68-80; 6/68 - Use of the 19 mile self-guiding tour route continued to increase, and an estimated 29,172 people made the trip. Mazzoni



NBR-68-96; 6/68 - A visitor enjoys a growing form of public recreation - outdoor photography. The antelope fawn barely visible in lower right was less than 24 hours old at this moment. Mazzoni



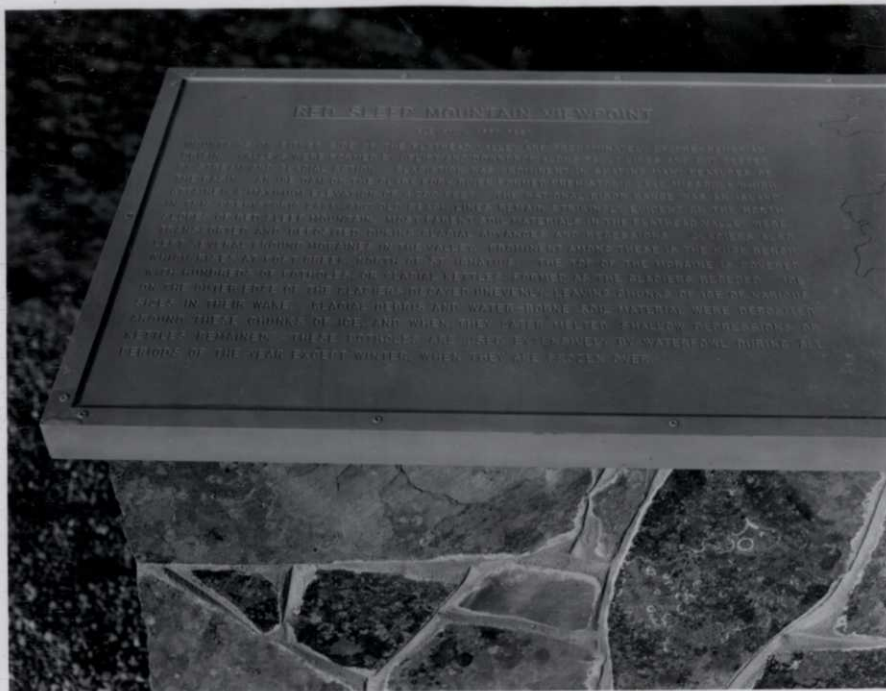
NBR-68-97; 6/68 - Twenty-one fawns were born, and antelope population at end of year totaled 84. Mazzoni



NBR-68-117; 6/68 - Tourists viewing interpretive plaque installed at Red Sleep Mountain viewpoint prior to tour season. Note fence and telephone line in background. Mazzoni



NBR-68-137; 11/68 - Esthetic qualities of this scenic section of tour route were vastly improved with removal of Sheep Pasture north boundary fence and lookout telephone line. Mazzoni



NBR-68-139; 11/68 - The interpretive plaque was constructed by Yosemite National Park sign shop of anodized aluminum. The narration and location are routed into the metal. Native stone picked on refuge was used for base. Mazzoni



NBR-68-91; 6/68 - Refuge personnel cooperated with GMA Ash Brann and State Fish and Game Department personnel in Canada goose banding project. Fifty-five adults and 125 locals were banded. Mazzoni



NBR-68-126; 7/68 - A basic system of Parker 3-step grassland transect clusters were established. Gene Eulert, MSU, "reading" tape, Mazzoni recording. Augsburg



NBR-68-121; 7/68 - The aerial goatweed control program in Alexander Basin and Northside Ranges involved 1,284 acres. Aerial contract applicator was Chick Webb of Polson. Mazzoni



NBR-68-145; 11/68 - A two-way radio system was installed on July 29, an important contribution to our public SAFETY and refuge protection programs. The system comprised a 40 watt base station, three 15 watt mobiles, and a two watt portable. Mazzoni



NBR-68-146; 11/68 - With seven vehicles equipped with mounting brackets (background), the "quick-change" features of the mobile units provide maximum flexibility at minimum cost. Mazzoni



NBR-68-147; 10/68 - Deteriorated sections of bison corrals were replaced with pipe construction. Material obtained excess through McNary and Desert Game refuges. Mazzoni



NBR-68-149; 10/68 - A sleeve-type joint was used to permit contraction and expansion without damage. Mazzoni



Maintenanceman Krantz making a cut. Although new corrals were only half completed by roundup, they greatly facilitated handling of live sale animals. Robert Larsson photo.



One lesson quickly learned was that blind corners have to be covered. This four year old bull rammed straight into section of pipe where man's hand is resting and broke its neck. Robert Larsson photo.



Ten adult cows were color ear-tagged for Dr. Dale Lott's study of bison sexual behavior. A hand rubbed gently on their foreheads seemed to calm them! Mazzoni



The "boss" and her crew at roundup. From left, Mazzoni, May, Kenney and Gladys Young. Gladys' retirement became effective November 2. Mel Ruder photo.



The chill of early morning air, the smell of moist grass, the sounds of the herd - a feeling of being very much alive and far removed from a troubled world. This is part of what I leave behind. Mazzoni



Wintering mallards on Ninepipe. Kenney



A new nesting island, built on the 3002 level, was completed in February. The island was the first built on either Ninepipe or Pablo since 1958. Mazzoni



Rock was hauled from the old highway dike near headquarters for riprap. Mazzoni



Lone Tree Island was also elevated about four feet so that no more nests will be lost to flooding. May



Further nesting improvements included the 9 tree baskets built and installed by Kenney and John Augsburger. Augsburger



Frank Kenney and son, Lowell, looking for flightless geese on Flathead Lake. A total of 207 birds was trapped during the cooperative goose banding project, including 26 re-traps and 128 locals. Mazzoni



Better access and better grazing distribution was gained through construction of this causeway across a marsh in the northeast portion of the refuge. From left: May and Kenney. Mazzoni



The surface of the fishermen's access and public viewpoint was gravelled. Mazzoni